Combined Author Index

Aaronson, H.I. 1159-1167A
Abbaschian, G.J. 1147-1157A
Adams, T.N. 411-424B
Agrawal, B. 221-230B
Ågren, J. 2167-2170A
Ahmadzai, H. 589-604B
Akben, M.G. 1967-1977A
Albert, E. 2117-2123A
Allegra, L. 401-411A
Alstetter, C. 2085-2090A
Altsetter, C. 2077-2084A
Amero, B.R. 617-623B
Anctil, A.A. 1661-1669A
Ando, T. 1261-1269A
1033-1045A
Andrade, H.L. 1967-1977A
Angers, R. 1511-1512A
Ankem, S. 500-503A
Ansell, G.S. 1293-1297A
1929-1931A
1013-1019A
Ardell, A.J. 1957-1965A
Arnold, G. 1573-1577A
Arzt, E. 211-221A
Asaki, Z. 17-24B
109-116B
Ashby, M.F. 211-221A
1755-1769A
Ashok, S. 1997-2003A
Atasoy, Ö.E. 379-384A
Atkins, R.M. 53-60A
Austin, C.M. 1516-1518A
Averbach, B.L. 1889-1898A
1899-1906A
Avtar, R. 308-312A
Ayers, J.D. 5-10A
Ayres, R.A. 2269-2275A

Bacon, D.W. 159-170B
Baer, D.R. 223-232A
1729-1736A
Baguley, P. 513-514B
Baker, T.J. 1921-1928A
Bale, C.W. 77-83B
117-124B
Bampton, C.C. 1583-1591A
Bandyopadhyay, N. 881-888A
1313-1325A
2005-2019A
Banerjee, D. 413-420A
Banerji, A. 273-283B
Barcik, J. 635-641A
Bars, J.-P. 1537-1543A
Bautista, R.G. 657-665B
5-15B
25-31B
Beaven, P.A. 1021-1024A
Beckerman, L.P. 463-469A
Beckwith, G.T. 2182-2184A
Begley, J.A. 67-73A
Behnood, N. 1327-1332A
Belton, G.R. 1915-1919A
267-272B
441-449B
Bentley, J. 655-666A
Beremin, F.M. 2277-2287A
Bernstein, I.M. 1379-1388A
2517-2526A
Bhagiradha Rao, E.S. 733-742A
Bhogeswara Rao, D. 295-305A
Bibby, M.J. 483-486B
Biber, H.E. 369-373B
Birnbaum, H.K. 203-210A
Bishop, T.A. 687-693A
Biśs, V.A. 845-855A
Bisson, C.L. 1257-1260A
Blairs, S. 589-604B
Blaser, M.S. 495-497B
Blenkinsop, P.A. 2497-2505A
Block-Bolten, A. 231-237B
Boateng, A. 67-73A
Boone, D.H. 1427-1433A
Bose, K. 413-420A
Bourell, D.L. 2487-2496A
2563-2566A
Bradshaw, A.V. 743-752B
Braski, D.N. 1785-1791A
Brenner, S.S. 1021-1024A
Briant, C.L. 2005-2019A
Brimacombe, J.K. 1803-1815A
191-205B
207-219B
411-424B
Brisley, R.J. 435-440B
Brittain, R.D. 171-174B
Brofman, P.J. 1929-1931A
Bronson, M.C. 605-615B
Brooks, I.A. 75-84A
Brooks, J.A. 23-31A
1271-1281A
Brotzen, F.R. 1409-1419A
Brown, E.L. 791-800A
1179-1188A
Brückmann, G. 761-764B
Bruemmer, S.M. 223-232A
1729-1736A
Burleigh, T.D. 1223-1224A
Burnett, M.F. 791-800A
Byrne, M. 441-449B

Caligiuri, R.D. 1395-1408A
Carey, C.D. 353-357B
Caskey, G.R., Jr. 2261-2267A
Castleman, L.S. 2479-2485A
45-51A
Cathles, L.M. 325-334B
Chakraborti, N. 239-251B
Chan, K.S. 1333-1342A
1343-1348A
Chanani, G.R. 2182-2184A
Chande, T. 181-190B
Chang, K.H. 317-324B
Chang, P.-H. 163-173A
Chari, Y.N. 733-742A
Chatterjee, A. 375-381B
383-392B
393-399B
Chau, B. 1803-1815A
Chaubal, P.C. 303-306B
Chen, I.-W. 2289-2293A
Chen, L.J. 365-378A
Chen, S.-H. 571-580A
Cheng, H.C. 365-378A
Chicco, B. 312-314A
Cho, E.H. 317-324B
Choi, H.J. 1089-1099A
Choo, W.K. 973-975A
Choo, W.Y. 1299-1305A
Chou, T.W. 2415-2421A
Christian, J.W. 1237-1256A
Chung, Y.-W. 1421-1425A
Cieslak, M.J. 37-44A
Clark, J.B. 2295-2299A
889-894A
Clugston, S.F. 695-699A
Cohen, J.B. 117-126A
Cohen, M. 147-152B
995-1005A
1057-1065A
1007-1012A
513-518A
991-993A
Colijn, P.F. 395-399A
Collins, A.L.W. 701-707A
Coltters, R.G. 1915-1919A
Conrad, H. 2545-2556A
Coombs, P.G. 95-99B
Cooper, W.C. 159-170B
Cosandey, F. 611-621A
Courtney, T.H. 977-978A
Couture, A. 1511-1512A
Crosley, P.B. 1459-1465A
Cuddy, L.J. 1989-1995A

Dabbs, D.M. 502-504B
Dadras, P. 2363-2374A
1512-1516A
Danh, N.C. 1843-1850A
Därmann, C. 11-15A
Das, B.N. 953-961A
Dasgupta, A. 1833-1841A
David, D. 1537-1543A
David, S.A. 1833-1841A
1785-1791A
Davidson, D.L. 1227-1230A
1523-1524A
Davidson, J.M. 895-901A
1516-1518A
Davis, A.M. 355-364A
Daw, M.S. 1257-1260A
Dayananda, M.A. 857-864A
1851-1858A
de Matos, M. 49-53B
deBarbadillo, J.J. 329-341A
Debuigne, J. 1537-1543A
DeCristofaro, N. 1135-1145A
Delargy, K.M. 1771-1783A
DeMello, J.D.B. 1793-1801A
Denpo, K. 633-643B
DeSisto, T.S. 1661-1669A
Devine, T.M. 1721-1728A
Dickey, A.E. 389-373B
Dieker, C. 2440-2442A
Dimiduk, D.M. 493-498A
Doig, A. 1427-1433A
Doig, P. 1943-1949A
Domalavage, P.K. 1599-1606A
Döner, M. 2545-2556A
Donoso, I. 875-880A
Doraivelu, S.M. 1671-1679A
Drew, R.A.L. 175-182A
Drotning, W.D. 1545-1548A
Duerig, T.W. 2101-2115A
Duletsky, P.S. 1395-1408A
Dupre, B. 125-132B
Durand-Charre, M. 1793-1801A
Dutrizac, J.E. 531-539B
Duvernoy, J. 105-108B

Eades, J.A. 1561-1571A
Eagar, T.W. 1223-1224A
510-513B
Eary, L.E. 325-334B
Easterling, K.E. 211-221A
Eastman, K. 483-486B
Eckert, C.A. 451-458B
Edmonds, D.V. 667-677A
Edwards, M.R. 1427-1433A
Ehlers, S.K. 2435-2437A
El-Kaddah, N. 401-410A
Eldis, G.T. 995-1005A
1007-1012A
Elliott, J.F. 679-683B
1713-1720A
221-230B
Eloff, P.C. 761-769A
Elrefaie, F.A. 85-93B
Eriksson, G. 459-464B
Esdaile, J.D. 2211-2218A
1707-1712A
771-775A
Etchessahar, E. 1537-1543A
Evans, A.G. 1349-1355A
Evans, J.T. 1327-1332A
1505-1510A
Evans, J.W. 63-70B
353-357B
306-308B
Evans, P.G 617-623B
Eylon, D. 2178-2181A
2497-2505A
761-769A
1524-1528A

Fariabi, S. 701-707A
Favier, J.J. 105-108B
Ficalora, P.J. 2423-2434A
Fine, H.A. 685-692B
Fine, M.E. 1189-1197A
Flemings, M.C. 1147-1157A
Flewitt, P.E.J. 1943-1949A
978-983A
679-686A
Floreen, S. 895-901A
133-139A
2185-2187A
Fosnacht, D.R. 845-855B
Foulds, J.R. 1357-1366A
Fraser, H.L. 1979-1988A
1561-1571A
623-633A
Fray, D.J. 435-440B
625-631B
Fredriksson, M. 459-464B
Fritzemeier, L.G. 727-731A
Froes, F.H. 2497-2505A
761-769A
1524-1528A
Fromm, E. 2117-2123A
Fujiwara, S. 1067-1077A
Fukunaka, Y. 633-643B
Funaki, K. 347-352B
Funkenbusch, A.W. 1283-1292A
Furubayashi, E. 717-726A

Gabathuler, J.P. 733-741B
Gan, D. 1518-1521A
Gao, H.W. 541-551B
553-558B
Gardiner, R.W. 2497-2505A
Gaskell, D.R. 725-731B
259-266B
Gauthier, M. 117-124B
Gayda, J. 2301-2308A
Gefen, Y. 1599-1606A
German, R.M. 2031-2041A
Ghosh, A.K. 1583-1591A
1593-1598A
Gibala, R. 2143-2161A
Gilmore, C.M. 233-240A
Ginter, T.J. 2309-2318A
Gleitzer, C. 125-132B
Goel, A. 2309-2318A
Goel, N.C. 308-312A
Goig, P. 978-983A
Goldak, J.A. 483-486B
Goldstein, J.I. 2437-2439A
1224-1227A
Gonzalez, G. 2507-2515A
Gooch, D.J. 1443-1449A
Goods, S.H. 314-317A
Gordon, J.R. 925-930A
Gorog, J.P. 411-424B
Graham, M.J. 2558-2560A
Grant, N.J. 1451-1458A
1599-1606A
Gray, G.T., III 421-433A
Green, J.A.S. 925-930A
Greenfield, I.G. 2415-2421A
Gupta, C.K. 133-135B

Hack, J.E. 2083-2075A
Haggag, F.M. 1607-1613A
Hajra, J.P. 2125-2130A
Hall, E.L. 355-364A
1549-1560A
781-790A
Hamar-Thibault, S. 1793-1801A
Hamilton, C.H. 1583-1591A
1593-1598A
Han, K.H. 973-975A
Hansen, N. 2235-2243A
Hardie, D. 1505-1510A
Hardwick, D.A. 2517-2526A
Harris, B. 589-604B
Harrison, R.J. 1505-1510A
Hart, R.G. 401-411A
Hasan, F. 1951-1956A
Hattori, I. 1649-1659A
Hau-Bracamonte, J.L. 1743-1745A
Hawbolt, E.B. 1803-1815A
Haworth, W.L. 931-938A
Hayes, P.C. 753-759B
513-514B
Hecker, S.S. 2527-2533A
Heggie, D.G. 2497-2505A
Henderson, P.J. 521-530A
Henein, H. 191-205B
207-219B
Hennessy, D.G. 1013-1019A
Henry, J.L. 301-303B
Herro, H.M. 17-21A
Hess, J.B. 323-327A
Higuchi, B. 17-24B
Hildenbrand, D.L. 171-174B
253-258B
Hirose, S. 1189-1197A
Hirotsu, Y. 1025-1031A
Hirth, J.P. 2055-2061A
259-269A
Ho, P. 2558-2560A
Hocker, R.G. 2182-2184A
Holbrook, J.H. 2091-2099A
1681-1695A
Holcombe, C.E. 497-499B
Hondros, E.D. 521-530A
Hong, G.-W. 156-158A
Hopple, G.B. 889-894A
Houska, C.R. 61-66A
Hu, H. 85-91A
1521-1523A
307-308A
Hua, C.H. 504-506B
Huffman, G.P. 1079-1087A
Huh, T. 353-357B
Hwang, S.K. 2021-2030A

Ikeya, M. 151-152A
Imam, M.A. 233-240A
Inoue, A. 2319-2327A
1367-1377A
Irwin, R.B. 451-458B
Iwase, M. 765-768B

Jacinto, N. 506-509B
136-139B
Jackson, M.R. 355-364A
1549-1560A
781-790A
Jacob, K.T. 1748-1750A
295-305A
Jagannadham, K. 1615-1625A
Jahanafrooz, A. 1951-1956A
James, M.R. 153-155A
1697-1705A
Jensen, R.R. 335-393A
Jhingan, A.K. 1121-1133A

Jianting, G. 2329-2335A
Jing, K.L. 127-132A
Johnson, H.H. 963-971A
Johnson, W.C. 2219-2227A
Johnston, M.H. 2163-2167A
Jonas, J.J. 1967-1977A
Jones, R.H. 223-232A
1729-1736A
Jordan, R.R. 55-62B
Joshi, A. 2447-2454A
Juhas, M.C. 1379-1388A

Kain, K. 1997-2003A
Kameda, J. 881-888A
903-911A
Kamuo, M. 101-104B
Kaplow, R. 1135-1145A
Kashyap, B.P. 1875-1882A
Katz, Y. 801-808A
Kaufman, M.J. 1561-1571A
623-633A
Kim, C.H. 1389-1394A
Kim, C.W. 857-864A
Kim, H.S. 571-576B
Kim, I.S. 1497-1504A
Kim, J.I. 93-103A
Kim, S.J. 1497-1504A
Kim, Y.H. 1883-1888A
Kimura, H. 709-716A
Kirchheim, R. 2117-2123A
Kishimoto, N. 465-471B
Kiuchi, H. 347-352B
Klueh, R.L. 1047-1055A
581-593A
Ko, H.C. 301-303B
Koizumi, T. 1641-1648A
1649-1659A
Kondo, Y. 633-643B
17-24B
109-116B
Konitzer, D.G. 1979-1988A
Koon, N.C. 953-961A
Koss, D.A. 2527-2533A
1333-1342A
1343-1348A
Kou, S. 1169-1177A
2245-2253A
643-653A
1859-1867A
Kouh, Y.M. 781-790A
Koul, A.K. 183-189A
Kramer, I.R. 127-132A
Krauss, G. 791-800A
1261-1269A
1033-1045A
1109-1119A
Kukusumi, M. 2131-2142A
Kula, E.B. 1661-1669A
Kuo, V.W.C. 435-447A
Kusunoki, M. 1025-1031A
Kwon, H. 1389-1394A

Lahoti, G.D. 743-750A
105-115A
Laird, C. 2507-2515A
Lamoreaux, R.H. 171-174B
253-258B
Landon, P.R. 1395-1408A
Landsberg, A. 301-303B
Langer, S.H. 559-570B
Lankford, J. 1227-1230A
Lau, K.H. 171-174B
253-258B
Laukonis, J.V. 1487-1495A
Le, Y. 2245-2253A
Le, Y.P. 643-653A
Lea, C. 667-677A
Lee, C.K. 153-158B
Lee, H.J. 913-920A
Lee, J.-Y. 156-158A
Lee, J.W. 571-576B
Lee, J.Y. 1299-1305A
Lee, M. 1625-1629A
Lee, Y.-T. 761-769A
Lentz, C.W. 2527-2533A
Li, C. 2031-2041A
Li, D. 611-621A
Li, J.-C. 1293-1297A
Li, Y.-K. 509B
Liaw, P.K. 1631-1640A
Liddell, K.C. 5-15B
Liebermann, H.H. 1817-1823A
Liedl, G.L. 163-173A
Lim, B.S. 2557-2558A
Lin, R.Y. 1713-1720A
Lipsitt, H.A. 2170-2174A
Liu, T.-K. 657-665B
Liu, Y.C. 2566-2567A
1199-1205A
Logan, R.W. 2337-2346A
Loos, P.J. 1409-1419A
Loretto, M.H. 1561-1571A
Loria, E.A. 2185-2187A
Lorimer, G.W. 1951-1956A

Lou, B. 1889-1898A
1899-1906A
Lucas, G.E. 1607-1613A
Lücke, K. 11-15A
Lympany, S.D. 63-70B
306-308B
Lynch, D.C. 502-504B
239-251B

Ma, C.-B. 1033-1045A
Mahoney, M.W. 1583-1591A
1593-1598A
Majumdar, D. 1421-1425A
Mallik, A.K. 155-156A
Marcus, H.L. 1307-1312A
Margolin, H. 500-503A
2043-2053A
1481-1486A
Markworth, A.J. 687-693A
Martin, P.L. 2170-2174A
Martins, G.P. 49-53B
Masumoto, T. 2319-2327A
709-716A
1367-1377A
Matejczyk, D.E. 241-247A
1435-1441A
Mathias, H. 801-808A
Matsumoto, K. 109-116B
Matsuyama, M. 498-500A
Maxwell, R.E. 1817-1823A
Mazumder, J. 181-190B
McDonald, G.W. 559-570B
McEnerney, J.W. 1357-1366A
McEvily, A.J. 1737-1742A
McLean, A. 765-768B
McMahon, C.J., Jr. 881-888A
903-911A
1101-1108A
1313-1325A
McNallan, M.J. 425-434B
McNelley, T.R. 1427-1433A
Mehan, R.L. 355-364A
1549-1560A
781-790A
Mehrabian, R. 1169-1177A
Mendiratta, M.G. 2435-2437A
2170-2174A
Menyhárd, M. 2187-2189A
Merchant, S.M. 1745-1747A
1825-1831A
Miglin, M.T. 2055-2061A
Miki, T. 151-152A
Miller, M.K. 1021-1024A
Miller, R.S. 71-75B
Minakawa, K. 1737-1742A
Minegishi, T. 17-24B
Miner, R.V. 2301-2308A
Mishra, B. 2255-2260A
Mishra, S. 11-15A
Mitra, U. 510-513B
Mittemeijer, E.J. 395-399A
976-977A
Mohamed, F.A. 2309-2318A
Moinpour, M. 711-723B
Monhemius, A.J. 335-346B
Montpetit, M.C. 931-938A
Moody, N.R. 1528-1531A
Moosbrugger, J.C. 1512-1516A
Moriyama, J. 101-104B
Morlevat, J.P. 105-108B
Morris, D.R. 617-623B
Morris, J.W., Jr. 93-103A
913-920A
1883-1888A
Morris, W.L. 153-155A
1697-1705A
Moteff, J. 1357-1366A
Moukassi, M. 125-132B
Muddle, B.C. 1979-1988A
667-677A
Muesing, W.E. 33-36A
Muir, W.B. 175-182A
Mukherjee, A.K. 1875-1882A
Mukherjee, D. 413-420A
Mukherjee, T.K. 133-135B
Mukhopadhyay, P.K. 375-381B
383-392B
393-399B
Mulford, R.A. 865-870A
Mulherin, J.H. 1459-1465A
Munir, Z.A. 95-99B
Murthy, A. 499-502B
Myers, S.M. 2261-2267A

Nadiv, S. 801-808A
Nafziger, R.H. 55-62B
Nagakura, S. 1025-1031A
Nagamori, M. 506-509B
136-139B
303-306B
Nair, S.V. 385-393A
Nakamura, M. 717-726A
Nakamura, Y. 1025-1031A
Narayan, C. 2437-2439A

Nardone, V.C. 1435-1441A
Narula, M.L. 673-677B
Natan, M. 963-971A
Nazmy, M.Y. 449-461A
Nduaguba, M. 679-683B
Negrete, J. 1931-1934A
Nelson, H.G. 295-305A
Nelson, J.L. 133-139A
Nenno, S. 2131-2142A
Newkirk, J.B. 2131-2142A
Ng, K. 1707-1712A
Niemi, A.N. 977-978A
Nishiki, T. 25-31B
Nityanand, N. 685-692B
Nix, W.D. 2447-2454A
563-570A
Nordine, P.C. 53-60A
Notis, M.R. 1745-1747A
1825-1831A
Noyan, I.C. 249-258A
1907-1914A

Obara, T. 1159-1167A
Ogawa, T. 1067-1077A
Ohmura, Y. 1067-1077A
Ohno, R. 667-672B
Oishi, T. 101-104B
Okabayashi, K. 2387-2393A
485-492A
Okanda, Y. 2131-2142A
Okazaki, M. 1641-1648A
1649-1659A
O'Keefe, T.J. 645-655B
495-497B
Olson, F.A. 577-588B
33-40B
Olson, G.B. 1057-1065A
1661-1669A
O'Neal, J.E. 2174-2177A
Öner, A.M. 53-60A
Ono, K. 101-104B
Onyewuenyi, O.A. 259-269A
Osseo-Asare, K. 571-576B
41-47B
Oudenne, P.D. 33-40B
Outlaw, R.A. 1869-1874A
Owen, R.B. 2163-2167A
Owens, D.R. 617-623B

Padgett, R.A. 595-610A
Padmanabhan, R. 2357-2362A
2347-2356A
Page, R.A. 2063-2075A
Pal, U.B. 693-700B
Pande, C.S. 2021-2030A
Papp, R.A. 509B
Park, J.K. 1957-1965A
Park, S.C. 463-469A
Parlee, N.A.D. 504-506B
Parthasarathy, T.A. 2560-2563A
Paton, N.E. 2535-2544A
Pattnaik, S.P. 133-135B
Paugh, M. 921-924A
Paulson, R.R. 727-731A
Pelton, A.D. 77-83B
Perkins, J. 33-36A
2229-2234A
Perra, M.W. 1528-1531A
Pesic, B. 577-588B
Peterson, D.T. 871-874A
1869-1874A
17-21A
Petruk, W. 617-623B
Picco, E. 2329-2335A
Pickens, J.R. 925-930A
Pickering, H.W. 571-576B
Pilling, J. 1443-1449A
Pope, D.P. 571-580A
Prakash, T.L. 733-742A
Prasad, Y.V.R.K. 1671-1679A
Pressouyre, G.M. 2189-2193A
Purtscher, P.T. 791-800A

Qu, Z. 1101-1108A

Rai, G. 308-312A
1451-1458A
Raj, R. 1583-1591A
Rajamani, K. 175-180B
Rajan, K. 1843-1850A
Raley, J.C. 1989-1995A
Ralph, B. 2235-2243A
Ranucci, D. 2329-2335A
Rao, K.P. 1671-1679A
Rao, V.B. 61-66A
Rao, Y.K. 701-710B
308-311B
711-723B
Rawl, D.E., Jr. 2261-2267A
Ray, K.K. 155-156A
Redman, J.D. 498-500A

Reed-Hill, R.E. 463-469A
Remy, L. 141-149A
Renninger, D.R. 41-47B
Reuchet, J. 141-149A
Reyes, R.A. 725-731B
Ridley, N. 1951-1956A
1443-1449A
Ripling, E.J. 1459-1465A
Ritter, A.M. 37-44A
1721-1728A
Robertson, W.M. 156-158A
Robinson, M.L. 1516-1518A
Rohatgi, P.K. 273-283B
Rollins, R.R. 317-324B
Rolls, R. 1207-1211A
Romig, A.D., Jr. 1224-1227A
Ron, M. 1135-1145A
Rosa, C.J. 199-202A
Rosenfield, A.R. 2055-2061A
687-693A
1934-1937A
Roshan, H.Md. 1671-1679A
Roy, T.D. 693-700B
Rozendaal, H.C.F. 395-399A

Sadananda, K. 1467-1480A
Sadoway, D.R. 231-237B
Saelim, A. 259-266B
Saha, R.L. 413-420A
Salama, K. 701-707A
Saleh, Y. 1481-1486A
Sandvik, B.P.J. 2469-2477A
835-844A
809-822A
823-834A
2455-2468A
Sankaran, K.K. 2174-2177A
Sarikaya, M. 1121-1133A
Sasaki, Y. 267-272B
Sastry, S.M.L. 2174-2177A
Sathe, A.V. 375-381B
383-392B
Savage, W.F. 37-44A
Saxena, A. 1631-1640A
Schmid, R. 473-481B
Schneibel, J.H. 595-610A
Schober, T. 2440-2442A
Schuhmann, R., Jr. 291-300B
Schulson, E.M. 1523-1524A
Schultz, C.W. 1427-1433A
Schuster, G. 2077-2084A
2085-2090A
Schwartz, L.H. 1089-1099A
Schwenker, S.W. 1524-1528A
Schwerdtfeger, K. 761-764B
Schwoeble, A.J. 1079-1087A
Sczerzenie, F. 611-621A
Sekhar, J.A. 1169-1177A
Semiatin, S.L. 2363-2374A
2091-2099A
743-750A
1681-1695A
105-115A
Serandos, T.R. 497-499B
Seshan, K. 921-924A
Shahhosseini, M.H. 1207-1211A
Shahinian, P. 1467-1480A
Sharma, V. 1013-1019A
Shaw, N.B. 751-759A
Sherby, O.D. 2563-2566A
Sherman, A.M. 995-1005A
Sherman, R. 203-210A
Shetty, D.K. 1934-1937A
Shewmon, P.G. 2560-2563A
1579-1582A
695-699A
Shiflet, G.J. 1159-1167A
Shih, T.T. 1631-1640A
Shiraiwa, F. 1649-1659A
Shumaker, C.B. 291-300B
Sick, G. 761-764B
Sigler, D. 931-938A
Sikka, V.K. 581-593A
1357-1366A
Simkovich, G. 693-700B
Singh, R.P. 425-434B
Sinha, S.N. 136-139B
Sisson, R.D., Jr. 2261-2267A
Sivertsen, J.M. 2255-2260A
Siviour, N.G. 1707-1712A
Skidmore, A.J. 1934-1937A
Smashey, R.W. 1817-1823A
Smeltzer, W.W. 85-93B
Smialek, J.L. 2143-2161A
Smith, G.D.W. 1771-1783A
1021-1024A
Smith, J.S. 451-458B
Smith, M.F. 871-874A
Smith, R.L. 519B
2199-2208A
Sohn, H.Y. 506-509B
541-551B
553-558B
605-615B
136-139B
175-180B

Solberg, J.K. 1213-1221A
Sommer, A.W. 2178-2181A
1524-1528A
Speich, G.R. 1079-1087A
Spink, G.M. 751-759A
Spitzig, W.A. 271-283A
471-484A
Sproule, G.I. 2558-2560A
Srivastava, M.P. 375-381B
St. John, D.H. 753-759B
513-514B
Staehle, R.W. 67-73A
Staffansson, L.-I. 589-604B
Stanek, V. 487-493B
Stark, J.P. 2557-2558A
Starke, E.A., Jr. 435-447A
Steinmetz, P. 125-132B
Stephenson, E.T. 343-353A
Stevens, R.A. 679-686A
Stiegler, J.O. 655-666A
Stoloff, N.S. 1997-2003A
Stoltz, R.E. 1528-1531A
Stout, M.G. 2527-2533A
Strocchi, P.M. 2329-2335A
Suh, S.H. 117-126A
Sun, D.K. 643-653A
1859-1867A
Surappa, M.K. 273-283B
Suresh, S. 2375-2385A
Suriyayothin, N. 2357-2362A
Sutton, R.D. 510-513B
Suutala, N. 191-197A
Suzuki, T. 1025-1031A
Swaminathan, V.P. 1631-1640A
Sweett, F. 2211-2218A
Swindeman, R.W. 581-593A
Syn, C.K. 93-103A
Szekely, J. 499-502B
359-367B
401-410A
487-493B

Takacs, R.C. 369-373B
Takasugi, T. 571-580A
Takemoto, T. 127-132A
Tamura, I. 1067-1077A
Tanabe, T. 109-116B
Tanaka, T. 347-352B
Tangri, K. 2407-2413A
Tare, V.B. 673-677B
Tartaglia, J.M. 1997-2003A
Tavlarides, L.L. 153-158B
Taylor, P.R. 49-53B
Terlinde, G.T. 2101-2115A
Terry, B. 335-346B
Teruta, S. 633-643B
Thamburaj, R. 733-742A
Thomas, G. 1121-1133A
Thomas, G.J. 1545-1548A
Thomas, J.F., Jr. 2363-2374A
1512-1516A
Thomas, M.T. 223-232A
1729-1736A
Thompson, A.W. 23-31A
1271-1281A
156-158A
75-84A
421-433A
2517-2526A
Thon, H. 1213-1221A
Thorpe, W.R. 312-314A
Tien, J.K. 385-393A
241-247A
611-621A
727-731A
1435-1441A
Tobler, R.L. 1179-1188A
Togue, M. 151-152A
Tomioka, H. 2319-2327A
1367-1377A
Tomita, Y. 2387-2393A
485-492A
Torres-Villaseñor, G. 1931-1934A
Towhidi, N. 359-367B
Townsend, H.E. 401-411A
Trinkaus, H. 547-561A
Tsakalakos, T. 127-132A
Tsukada, K. 1737-1742A
Tweed, C.J. 2235-2243A

Ünal, A. 743-752B

Valdes, C.J. 159-170B
Valdés, L. 1931-1934A
Van Der Schaaf, P.J. 395-399A
Van Doorn, F.C. 976-977A
Varschavsky, A. 875-880A
Venkataraman, M. 2125-2130A
Venkatasubramanian, T.V. 1921-1928A
Viens, D. 1523-1524A
Vijayaraghavan, T.V. 2043-2053A
Vitek, J.M. 1833-1841A
1047-1055A

Wada, T. 845-855A
Wadsworth, J. 285-294A
Wadsworth, M.E. 541-551B
553-558B
Wagoner, R.H. 1487-1495A
2395-2406A
Wallace, W. 183-189A
1843-1850A
Walser, R. 1307-1312A
Walter, J.L. 1817-1823A
Wang, J.S. 563-570A
Wang, N.-M. 2395-2406A
Waseda, Y. 1748-1750A
Watanabe, T. 531-545A
Watkinson, A.P. 191-205B
207-219B
Watts, A.M. 753-759B
Wayman, C.M. 2469-2477A
835-844A
809-822A
823-834A
2455-2468A
Weertman, J. 117-126A
Weertman, J.R. 695-699A
Weinberg, F. 733-741B
939-946A
285-289B
Weissmann, S. 127-132A
Welsch, G. 761-769A
Welter, J.-M. 1573-1577A
Wert, J.A. 2535-2544A
West, A.J. 75-84A
Whipple, T.A. 1179-1188A
White, C.L. 595-610A
Wiffen, F.W. 655-666A
Wightman, G. 625-631B
Williams, D.B. 1745-1747A
1825-1831A
Williams, J.C. 23-31A
1271-1281A
2101-2115A
421-433A
Williams, R.K. 655-666A
Williams, W.M. 175-182A
Williamson, D.L. 1033-1045A
Wilson, W.D. 1257-1260A
Winchell, P.G. 163-173A
Wise, M.L.H. 1743-1745A
Wo, G. 2479-2485A
Wood, W.E. 2357-2362A
2347-2356A
Worrell, W.L. 673-677B
Wriedt, H.A. 307-308A
Wright, R.N. 2295-2299A
889-894A
Wu, T.W. 365-378A

Yamauchi, S. 939-946A
Yegneswaran, A.H. 2407-2413A
Yi, J.J. 1497-1504A
Yin, C.-A. 2545-2556A
Yokouchi, Y. 2415-2421A
Yoo, M.H. 547-561A
Yoshida, H. 465-471B
Yost, F.G. 947-952A
Yu, K.J. 1497-1504A
Yu, K.S. 2447-2454A
563-570A
Yu, Z.-S. 1579-1582A
Yurek, G.J. 221-230B

Zhuang, Y. 241-247A
Zia-Ebrahimi, F. 1109-1119A
Zolnay, G. 2187-2189A
Zurek, A.K. 1307-1312A
1697-1705A

Combined Subject Index

Abatement (pollution)
See Pollution abatement

Abrasion resistance
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B

Absorption (material)
See also Hydrogen storage

Absorption (material), Alloying effects
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N-^{14}N$ Isotope Exchange Reaction. 441-449B

Acid leaching
See also Nitric acid leaching
Sulfuric acid leaching
Acid Dissolution of Willemite ($(Zn,Mn)_2SiO_4$) and Hemimorphite ($Zn_4Si_2O_7(OH)_2H_2O$). 335-346B
Leaching of Bornite in Acidified Ferric Chloride Solutions. 577-588B

Acoustic emission, Microstructural effects
Grain Size—Acoustic Emission Relationships in Hydrogen-Induced Delayed Cracking. 2357-2362A

Actinide metals
See Uranium

Activated sintering
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A

Activation energy
Tritium Permeability and Pressure Dependence of 304L Stainless Steel in the Temperature Range 723 to 1023K. 498-500A
Kinetics of Reduction of Hematite With Hydrogen Gas at *Modest Temperatures.* 711-723B
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al Alloy at 973 to 1073K. 1207-1211A
Elastic Interaction of Two Precipitates Subjected to an *Applied Stress Field.* 2219-2227A
Effect of Stress Reductions on the Stress Exponent and Subgrain Size in an Al—Zn Alloy. 2309-2318A

Activity (chemical)
Vapor Pressure Determination of Arsenic Activity in a Molten Cu—Fe—S Matte. 253-258B
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions *With Liquid Silver at 1283K and a Liquid Silicate at 1373K.* 267-272B
Determination of the Sodium Activity in Aluminum and Aluminum—Silicon Alloys Using Sodium Beta Alumina. 435-440B
Re-Evaluation of the Activity of Arsenic in Molten Copper. 502-504B
The Thermodynamic Activity of ZnO in Silicate Melts. 725-731B
Thermochemistry of Na_2O—WO_3 System at 1065 to 1239K. 1713-1720A
Activity and Diffusivity of Oxygen in Tantalum- and Niobium-*Base Alloys.* 2117-2123A
A Note on the Theoretical Treatment of Up-Hill Diffusion in Compound Welds. 2167-2170A

Activity (chemical), Composition effects
Activities in Nickel—Bismuth Alloys. 765-768B

Activity coefficients
See Activity (chemical)

Age hardening
See Precipitation hardening

Age softening
See Overaging

Agents
See Reducing agents

Aging
See also Aging (artificial)
Overaging
Strain aging
Strength of Initially Virgin Martensites at—196°C After Aging and Tempering. 1007-1012A
An Atom Probe Study of the Aging of Iron—Nickel—Carbon Martensite. 1021-1024A
*Early Stages of Aging and Tempering of Ferrous Martens*ites. 1057-1065A
A TEM Study of Microstructural Changes During Retrogres*sion and Reaging in 7075 Aluminum.* 1843-1850A

Aging (artificial)
Orientation Relationships Between B.C.C. Molybdenum and *F.C.C. Gamma in a Nickel—Aluminum—Molybdenum—* Tungsten Superalloy. 493-498A
Microstructures of the Commercial 7075 Al Alloy in the T651 *and T7 Tempers.* 1957-1965A
The Effect of Copper Content and Microstructure on the Hydrogen Embrittlement of Al—6Zn—2Mg Alloys. 2517-2526A

Agitation
See Electromagnetic stirring

Air induction melting
See Induction melting

Air melting
See Melting

Air pollution
Kinetics and Mechanism of the Desulfurization of Liquid Blast Furnace Slags by Ar—H_2O Gas Mixtures. 221-230B

Aircraft components
See Airframes

Airframes, Materials selection
Anodic Coating Behavior of X7091 Aluminum P/M Alloy. 2182-2184A

Alkali metal compounds
See also Sodium chloride
Sodium compounds
Sodium hydroxide

Alkali metal compounds, Crystal growth
Factors Affecting Alkali Jarosite Precipitation. 531-539B

Alkali metals
See also Sodium

Alkali metals, Mechanical properties
Some Surprising Features of the Plastic Deformation of *Body-Centered Cubic Metals and Alloys.* 1237-1256A

Alkaline earth metal compounds
See Calcium compounds
Lime
Magnesium compounds

Alkaline earth metals
See Magnesium

Alkaline leaching
See also Ammonia pressure leaching
Cupric Chloride Leaching of Model Sulfur Compounds for Simple Copper Ore Concentrates. 559-570B
Cobalt Extraction in Ammoniacal Solution: Electrochemical Effect of Metallic Iron. 571-576B

Allotropic transformation, Microstructural effects
Influence of Microstructure on the Alpha-Gamma Transformation of Iron. 1511-1512A

Alloy cast iron
See Chromium iron

Alloy steels
See also Austenitic stainless steels
Boron steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium vanadium steels
Ferritic stainless steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Maraging steels
Martensitic stainless steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel molybdenum steels
Nickel steels
Prestressing steels
Silicon steels
Stainless steels
Tungsten steels
Vanadium steels
Opening of the Peter G. Winchell Symposium on the Tempering of Steel. 991-993A

Alloying
See Surface alloying

Alloys
See Alloy steels
Dispersion hardening alloys
Ferrous alloys
Precipitation hardening alloys
Superalloys

Alpha annealing
See Annealing

Alphatizing
See Annealing

Alumina
See Aluminum oxide

Aluminothermic reactions
Ferrovanadium From a Secondary Source of Vanadium. 133-135B

Aluminum, Alloying additive
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A

Aluminum, Alloying elements
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al Alloy at 973 to 1073K. 1207-1211A
Microstructure and Mechanical Properties of Zn—Al Alloys at Room Temperature. 1931-1934A
Austenite Grain Coarsening in Microalloyed Steels. 1989-1995A
Investigation of the Early Stages of Deformation of Two-Phase Copper—Aluminum Alloys. 2407-2413A

Aluminum, Binary systems
The Kinetics of Disperse Order Development in Alpha-CuAl Alloys. 875-880A

Aluminum, Diffusion
Interface Equilibrium in Alpha/Beta Cu—Al Diffusion Couples. 1224-1227A

Aluminum, Extraction
The Hall—Héroult Cell: Some Design Alternatives Examined by a Mathematical Model. 63-70B
The Vapor—Liquid Equilibria of the Aluminum Chloride—Ferric Chloride System. 301-303B

Aluminum, Mechanical properties
Grain Boundary Sliding and Stress Concentration During Creep. 531-545A

Aluminum, Quaternary systems
The Analysis and Calculation of Equilibria in Complex Metallurgical Systems. 701-710B

Aluminum, Reactions (chemical)
Reactions and Diffusion Between an Aluminum Film and a Titanium Substrate. 61-66A

Aluminum, Structural hardening
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Aluminum base alloys, Chemical analysis
Determination of the Sodium Activity in Aluminum and Aluminum—Silicon Alloys Using Sodium Beta Alumina. 435-440B

Aluminum base alloys, Coating
Anodic Coating Behavior of X7091 Aluminum P/M Alloy. 2182-2184A

Aluminum base alloys, Coatings
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A

Aluminum base alloys, Composite materials
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B

Aluminum base alloys, Corrosion
The Effect of Loading Mode on the Stress Corrosion Cracking of Aluminum Alloy 5083. 925-930A
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A
The Effect of Copper Content and Microstructure on the Hydrogen Embrittlement of Al—6Zn—2Mg Alloys. 2517-2526A

Aluminum base alloys, Crystal growth
Fluid Flow Into a Dendritic Array Under Forced Convection. 733-741B
Heat Flow Model for Surface Melting and Solidification of an Alloy. 1169-1177A

Aluminum base alloys, Crystal lattices
Method of Analysis of the Regularity of Lamellar Eutectic Structures by Diffraction of a Laser Beam. 105-108B

Aluminum base alloys, Diffusion
Deuterium Transport and Trapping in Aluminum Alloys. 1307-1312A

Aluminum base alloys, Forging
Deformation Processing of an Aluminum Alloy Containing Particles: Studies on Al—5% Si Alloy 4043. 1671-1679A

Aluminum base alloys, Mechanical properties
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A
Degradation of Mechanical Properties After 100 to 250°C Storage of 25 Micrometer Al—1% Si Microelectronic Interconnect Wire. 921-924A
Metallography of Fatigue Crack Initiation in an Overaged High-Strength Aluminum Alloy. 931-938A
Wear Debris Due to Mode II Opening of Mode I Fatigue Cracks in an Aluminum Alloy. 1227-1230A
Observations of Grain Boundary Sliding During Superplastic Deformation. 1451-1458A
The Effect of Grain Size on Fatigue Growth of Short Cracks. 1697-1705A
Effects of Second-Phase Dispersoids on Deformation Behavior of Al—Li Alloys. 2174-2177A
Effect of Stress Reductions on the Stress Exponent and Subgrain Size in an Al—Zn Alloy. 2309-2318A
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A

Aluminum base alloys, Metal working
Control of Superplastic Cavitation by Hydrostatic Pressure. 1583-1591A
Development of Forming Limits for Superplastic Formed Fine-Grain 7475 Al. 1593-1598A

Aluminum base alloys, Oxidation
The Dynamic Oxidation of Aluminum and Its Alloys. 625-631B

Aluminum base alloys, Powder technology
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A
Fatigue Crack Initiation and Microcrack Propagation in X7091 Type Aluminum P/M Alloys. 1189-1197A
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A

Aluminum base alloys, Recovering
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A

Aluminum base alloys, Structural hardening
Further Observations on the Formation Mechanisms of Precipitate-Free Zones in an Aged Al—16 Wt.-% Ag Alloy. 1745-1747A
An AEM Investigation of the Formation of Precipitate-Free Zones in an Al—16 Wt.-% Ag Alloy—Determination of Equilibrium and Metastable Solvus Lines. 1825-1831A
A TEM Study of Microstructural Changes During Retrogression and Reaging in 7075 Aluminum. 1843-1850A
Microstructures of the Commercial 7075 Al Alloy in the T651 and T7 Tempers. 1957-1965A

Aluminum base alloys, Welding
Three-Dimensional Heat Flow and Solidification During the Autogenous GTA Welding of Aluminum Plates. 2245-2253A

Aluminum compounds
See also Aluminum oxide

Aluminum compounds, Mechanical properties
Microstructure and Mechanical Properties of Rapidly Quenched $L1_2$ Alloys in Ni—Al—X Systems. 1367-1377A
Creep Deformation of TiAl and TiAl + W Alloys. 2170-2174A

Aluminum compounds, Powder technology
Flow Localization Accompanying the Intergranular Fracture of Ni_3Al. 1523-1524A

Aluminum compounds, Reactions (chemical)
*The Vapor—Liquid Equilibria of the Aluminum Chloride—*Ferric Chloride System. 301-303B

Aluminum killed steels, Mechanical properties
On the R-Value Measurements. 1199-1205A
On the Strain Dependence of Plastic-Strain Ratio of Deep Drawing Sheet Steels. 1521-1523A
Operant Strain-Rate Sensitivity During Tensile Necking. 2395-2406A

Aluminum killed steels, Structural hardening
Plastic Behavior of Aluminum-Killed Steel Following Plane-Strain Deformation. 1487-1495A

Aluminum oxide, Composite materials
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Aluminum oxide, Powder technology
Practical Applications of Hot Isostatic Pressing Diagrams: Four Case Studies. 211-221A

Aluminum oxide, Reactions (chemical)
Thermodynamics of the System Iron—Aluminum—Oxygen Between 1073 and 1573K. 85-93B

Alzak process
See Anodizing

Ammonia pressure leaching
Statistical Modeling of Solvent Extraction Equilibria: Extraction of Copper From Sulfuric Acid and Ammoniacal Solutions by Mixtures of LIX 64N and SME 529. 159-170B

Ammonium compounds, Crystal growth
Optical Observations of Unidirectional Solidification in Microgravity. 2163-2167A

Amorphous materials
See Metallic glasses

Amplifiers
See Lasers

Analyzing
See Conductiometric analysis
Depth profiling
Mathematical analysis
Microanalysis
Statistical analysis
X ray spectroscopy
X ray stress analysis

Androforming
See Stretch forming

Anemometers
Hot Film Anemometry in Molten Woods Metal. 499-502B

Anemometry
See Anemometers

Anisotropy
On the R-Value Measurements. 1199-1205A

Anisotropy, Microstructural effects
Effect of Sulfides and Sulfide Morphology on Anisotropy of Tensile Ductility and Toughness of Hot Rolled C—Mn Steels. 471-484A

Annealing
See also Homogenizing
Isothermal annealing
Orientation Distribution Function Analysis of the Recrystallization Texture in a Boron-Treated Deep-Drawing Steel. 11-15A
Differential Resistivity Measurement for Monitoring Annealing. 175-182A
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A

Anodic coatings
Anodic Coating Behavior of X7091 Aluminum P/M Alloy. 2182-2184A

Anodic oxidation
See Anodizing

Anodizing
Anodic Coating Behavior of X7091 Aluminum P/M Alloy. 2182-2184A

Antidomains
See Domains

Antimony, Diffusion
Influence of Sulfur, Phosphorus and Antimony Segregation on the Intergranular Hydrogen Embrittlement of Nickel. 223-232A
A Study of the Chemical Composition of Grain Boundaries and Creep Cavity Surfaces in a Cu—Sb Alloy. 2447-2454A

Antimony, Impurities
Volatization of Arsenic and Antimony in Copper Matte Converting. 303-306B
The Effects of Certain Impurities and Their Interactions on Zinc Electrowinning. 645-655B
Solute Segregation and Hydrogen-Induced Intergranular Fracture in an Alloy Steel. 903-911A

Antiphase boundaries
DO_3-Domain Growth Kinetics in the Fe—20 At.% Al—5 At.% Si Alloy. 2435-2437A

Arc welding
See Gas tungsten arc welding
See Submerged arc welding

Arc welds
See Welded joints

Argon arc welding
See Gas tungsten arc welding

Arrhenius activation energy
See Activation energy

Arsenic, Impurities
Volatization of Arsenic and Antimony in Copper Matte Converting. 303-306B
The Effects of Certain Impurities and Their Interactions on Zinc Electrowinning. 645-655B

Arsenic, Reactions (chemical)
Thermodynamics of Roasting Arsenopyrite. 239-251B
Vapor Pressure Determination of Arsenic Activity in a Molten Cu—Fe—S Matte. 253-258B
Re-Evaluation of the Activity of Arsenic in Molten Copper. 502-504B

Arsenic compounds, Impurities
Vaporization Studies of Calcium Arsenate Under Neutral Conditions and in Contact With Copper Pyrometallurgical Slags. 171-174B

Artificial aging
See Aging (artificial)

Atmospheres
See Controlled atmospheres

Atmospheric pollution
See Air pollution

Atomic diffusion
See Diffusion

Atomic reactors
See Nuclear reactors

Atomization
See Atomizing

Atomizing
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A

Ausforming
Strength of Initially Virgin Martensites at −196°C After Aging and Tempering. 1007-1012A

Austenite
See also Retained austenite

Austenite, Crystal growth
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A

Austenite, Phase transformations
Quantitative Geometric Characterization of High-Carbon Martensite. 163-173A

Austenitic stainless steels, Corrosion
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A
Corrosion of 310 Stainless Steel in H_2—H_2O—H_2S Gas Mixtures: Studies at Constant Temperature and Fixed Oxygen Potential. 295-305A

Austenitic stainless steels, Diffusion
Tritium Permeability and Pressure Dependence of 304L Stainless Steel in the Temperature Range 723 to 1023K. 498-500A
The Diffusivity of Hydrogen in Niobium-Stabilized Stainless Steel. 1869-1874A

Austenitic stainless steels, Irradiation
Effects of X-Ray Irradiation on Hydrogen-Induced Phase Transformations in Stainless Steel. 151-152A
Ion-Beam Profiling of ^3He in Tritium-Exposed Type 304L and Type 21-6-9 Stainless Steels. 2261-2267A

Austenitic stainless steels, Mechanical properties
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A
Crack and Cavity Nucleation at Interfaces During Creep. 547-561A
Residual and Trace Element Effects on the High-Temperature Creep Strength of Austenitic Stainless Steels. 581-593A
Fracture Toughness of CF8 Castings at 4K. 1179-1188A
Microfracture Model for Hydrogen Embrittlement of Austenitic Steels. 1528-1531A
Crack Propagation of Steels During Low-Cycle Thermal-Mechanical and Isothermal Fatigue at Elevated Temperatures. 1641-1648A
Effect of Strain Wave Shape on Low-Cycle Fatigue Crack Propagation of SUS304 Stainless Steel at Elevated Temperatures. 1649-1659A
Plastic Flow Phenomenology of 304L Stainless Steel. 1681-1695A
Fatigue of Annealed and Cold Worked Stable and Unstable Stainless Steels. 2077-2084A
Fatigue of Stainless Steel in Hydrogen. 2085-2090A
Failure Behavior of 304L Stainless Steel in Torsion. 2091-2099A

Austenitic stainless steels, Microstructure
Microstructural Origin of the Skeletal Ferrite Morphology of Austenitic Stainless Steel Welds. 1271-1281A
Microstructural Modification of Austenitic Stainless Steels by Rapid Solidification. 1833-1841A

Austenitic stainless steels, Phases (state of matter)
The Kinetics of Sigma-Phase Precipitation in AISI 310 and AISI 316 Steels. 635-641A

Austenitic stainless steels, Welding
STEM Analysis of Primary Austenite Solidified Stainless Steel Welds. 23-31A
Precipitation in CF-8M Duplex Stainless Steel Welds. 37-44A
Effect of Weld Composition and Microstructure on Hydrogen-Assisted Fracture of Austenitic Stainless Steels. 75-84A
Effect of Solidification Conditions on the Solidification Mode in Austenitic Stainless Steels. 191-197A
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A

Austenitizing
Precipitation Reactions During the Heat Treatment of Ferritic Steels. 1047-1055A
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A
Effects of Microstructure on Fracture Toughness of a High-Strength Low-Alloy Steel. 2055-2061A

Auto oxidation
See Oxidation

Autodiffusion
See Diffusion

Bainite
Improvement in Lower Temperature Mechanical Properties of 0.40% C—Ni—Cr—Mo Ultrahigh Strength Steel With the Second-Phase Lower Bainite. 485-492A

Banded structure
The Occurrence of Shear Bands in Nonisothermal, Hot Forging of Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 105-115A
Effect of Sulfide Inclusion Morphology and Pearlite Banding on Anisotropy of Mechanical Properties in Normalized C—Mn Steels. 271-283A

Base exchange
See Cation exchanging

Bauer Vogel process
See Anodizing

Bayer process
Ferrovanadium From a Secondary Source of Vanadium. 133-135B

BCC metals, Mechanical properties
Some Surprising Features of the Plastic Deformation of Body-Centered Cubic Metals and Alloys. 1237-1256A

Bearing steels, Mechanical properties
The Effect of Prior Heat Treatments on the Structure and Properties of Warm Rolled AISI 52100 Steel. 1427-1433A

Bendability
See Formability

Binary systems, Atomic properties
Electron Charge Transfer in Liquid Copper—Tin Alloys. 1743-1750A

Binary systems, Phase transformations
The Kinetics of Disperse Order Development in Alpha-CuAl Alloys. 875-880A
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A

Binary systems, Phases (state of matter)
A Further Determination of the Austenite Solidus of the Fe—C System. 312-314A
A Thermodynamic Analysis of the Cu—O System With an Associated Solution Model. 473-481B
A Correlation of the Thermodynamic Properties and Phase Diagram of the System Lead—Silver Using a Gaussian Plus Subregular Formalism. 1707-1712A
The Thermodynamic Properties and Phase Diagram of the Zinc—Lead System. 2211-2218A

Binary systems, Solubility
Activities in Nickel—Bismuth Alloys. 765-768B

Binary systems, Thermal properties
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B

Bismuth, Binary systems
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B
Activities in Nickel—Bismuth Alloys. 765-768B

Blades
See Turbine blades

Blankets (atmospheres)
See Controlled atmospheres

Blast furnace chemistry
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B

Blast furnace slags
The Thermodynamic Activity of ZnO in Silicate Melts. 725-731B

Blast furnace slags, Reactions (chemical)
Kinetics and Mechanism of the Desulfurization of Liquid Blast Furnace Slags by Ar—H_2O Gas Mixtures. 221-230B

Blast furnaces
Reactions of Sinter in a Lead Blast Furnace. 617-623B

Blasting
See Shot peening

Blowing
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B

Body centered cubic metals
See BCC metals

Boiler scale
See Scale (corrosion)

Boiling
Pool Boiling Cooling for Melt Spinning Quench Wheels. 71-76B

Boiling points
The Thermodynamic Properties and Phase Diagram of the Zinc—Lead System. 2211-2218A

Bomb reduction
See Reduction (chemical)

Bombs (pressure vessels)
See Pressure vessels

Bornite, Reactions (chemical)
Leaching of Bornite in Acidified Ferric Chloride Solutions. 577-588B

Boron, Alloying additive
The Effects of Boron and Zirconium on the Creep and Fatigue Crack Growth Behavior of a Nickel-Base Superalloy. 895-901A

Boron intensified steels
See Boron steels

Boron steels, Crystal lattices
Orientation Distribution Function Analysis of the Recrystallization Texture in a Boron-Treated Deep-Drawing Steel. 11-15A

Boundaries
See Antiphase boundaries
Grain boundaries

Brasses, Heat treatment
Differential Resistivity Measurement for Monitoring Annealing. 175-182A

Brasses, Mechanical properties
Equilibrium Conditions for the Average Stresses Measured by X-Rays. 1907-1914A

Brasses, Phase transformations
The Effect of Thermal Cycling on the Thermoelastic Martensitic Transformation in a Cu—Zn—Al Alloy. 1293-1297A

Brittle fracture, Diffusion effects
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A

Brittleness
See also Temper brittleness

Brittleness, Impurity effects
Effect of Recycling on Residuals, Processing and Properties of Carbon and Low-Alloy Steels. 343-353A

Brittleness, Temperature effects
Degradation of Mechanical Properties After 100 to 250°C Storage of 25 Micrometer Al—1% Si Microelectronic Interconnect Wire. 921-924A

Bronzes, Phase transformations
Microstructural Development in Complex Nickel—Aluminum Bronzes. 1951-1956A

Bubbles
Direct Measurement of the Gas Content of Blisters Formed by Hydrogen Attack During Steam Corrosion in a Low-Alloy Steel. 2187-2189A

Cadmium, Alloying elements
Fatigue of Cu—1Cd. 1327-1332A

Cadmium, Binary systems
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B

Calcining
See Roasting

Calcium compounds
See also Calcium sulfate
Lime

Calcium compounds, Thermal properties
The Effect of TiO_2 Additions and Oxygen Potential on Liquidus Temperatures of Some CaO—Al_2O_3 Melts. 685-692B

Calcium oxide
See Lime

Calcium sulfate, Environment
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Calculating
See Computation

Calculation
See Computation

Calorimeters
Heat Effects of Precipitation Stages on Tempering of Carbon Martensites. 976-977A

Carbides
See also Silicon carbide
Tungsten carbide

Carbides, Crystal growth
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A

Heat Effects of Precipitation Stages on Tempering of Carbon Martensites. 976-977A
Influence of Interfacial Structure Upon Carbide Precipitation at Austenite:Ferrite Boundaries in an Fe—C—Mo Alloy. 1159-1167A
The Influence of the $M_{23}(C,N)_6$ Compound on the Mechanical Properties of Type 422 Stainless Steel. 1395-1408A

Carbides, Crystal lattices
Chi-Carbide in Tempered High-Carbon Martensite. 1033-1045A

Carbides, Diffusion
Carbon Diffusion in Mo_2C As Determined From Carburization of Molybdenum. 199-202A

Carbides, Solubility
Effect of Silicon on the Solubility Product of Vanadium Carbide in Austenite and on Other Phase Equilibria in Fe—V—Si—C Alloys at 993°C. 307-308A

Carbon, Alloying additive
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A

Carbon, Binary systems
A Further Determination of the Austenite Solidus of the Fe—C System. 312-314A

Carbon, Diffusion
Carbon Diffusion in Mo_2C As Determined From Carburization of Molybdenum. 199-202A
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A

Carbon, Reactions (chemical)
Insoluble Surface Carbon on Steel Sheet Annealed in Hydrogen—Nitrogen Atmosphere. 369-373B
An Experimental Investigation of the Internal Methane Pressure in Hydrogen Attack. 963-971A

Carbon compounds
See Carbides
Carbon dioxide
Carbon monoxide
Tungsten carbide

Carbon dioxide, Reactions (chemical)
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions With Liquid Silver at 1283K and a Liquid Silicate at 1373K. 267-272B
On the Interfacial Kinetics of the Reaction of CO_2 With Liquid Iron. 504-506B

Carbon monoxide, Reactions (chemical)
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B

Carbon steels
See also Aluminum killed steels

Carbon steels, Casting
Slag Movement in ESR of Steel. 761-764B

Carbon steels, Castings
The Effect of Cast Structure on the Ductility of Steel Above 900°C. 285-289B

Carbon steels, Diffusion
Discussion of "Permeation Measurements of Hydrogen Trapping in 1045 Steel" and Reply. 156-158A

Carbon steels, Heat treatment
Composition Control in Laser Surface Alloying. 181-190B
A Fundamental Study of Laser Transformation Hardening. 643-653A
Heat Effects of Precipitation Stages on Tempering of Carbon Martensites. 976-977A
Crystallographic Study of the Tempering of Martensitic Carbon Steel by Electron Microscopy and Diffraction. 1025-1031A

Carbon steels, Machining
Austenitization of Steel During Chip Formation. 1743-1745A

Carbon steels, Mechanical properties
Effect of Solutes on Lüders Strain in Low-Carbon Sheet Steels. 85-91A
On the Deformation of Flow Properties From Compression Tests. 155-156A
Effects of Hydrogen on Notch Ductility and Fracture in Spheroidized AISI 1090 Steel. 259-269A
Effect of Sulfide Inclusion Morphology and Pearlite Banding on Anisotropy of Mechanical Properties in Normalized C—Mn Steels. 271-283A
Thermomechanical Treatments of a 1050 Pearlite Steel. 365-378A
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A
Roughness-Induced Crack Closure: An Explanation for Microstructurally Sensitive Fatigue Crack Growth. 421-433A
Effect of Sulfides and Sulfide Morphology on Anisotropy of Tensile Ductility and Toughness of Hot Rolled C—Mn Steels. 471-484A
The Enhancement of Hydrogen Attack in Steel by Prior Deformation. 695-699A
An Experimental Investigation of the Internal Methane Pressure in Hydrogen Attack. 963-971A
Statistical Aspects of Cleavage Fracture in Steel. 1349-1355A
Effect of Prestrain on the Mechanical Properties of Eutectoid Steel. 1379-1388A
Comparison of the Plane Strain Crack Arrest Fracture Toughness of 4340, 4140 and 1340 Steel. 1459-1465A
Determination of Lüders Strains and Flow Properties in Steels From Hardness/Microhardness Tests. 1607-1613A
Evaluating Hardening Laws at Large Tensile Strains in Sheet Specimens. 2269-2275A
Cleavage Delamination in Impact Tested Warm Rolled Steel. 2487-2496A

Texture-Induced Cleavage Delamination of Warm Rolled Low-Carbon Steel. 2563-2566A

Carbon steels, Phase transformations
Kinetics of Austenite—Pearlite Transformation in Eutectoid Carbon Steel. 1803-1815A

Carbon steels, Recovering
Effect of Recycling on Residuals, Processing and Properties of Carbon and Low-Alloy Steels. 343-353A

Carbon steels, Welding
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B
Comparison of Theoretically Predicted and Experimentally Determined Submerged Arc Weld Deposit Compositions. 510-513B

Carbothermic reactions
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B
The Carbothermal Reduction of Nickel Sulfide in the Presence of Lime. 605-615B

Carburization
See Carburizing

Carburization (corrosion)
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B
Oxidation of Carburized Hastelloy X. 1518-1521A

Carburizing
Carbon Diffusion in Mo_2C As Determined From Carburization of Molybdenum. 199-202A

Case carburizing
See Carburizing

Case depth
The Development of Nitrogen Concentration Profiles on Nitriding Iron. 395-399A

Case hardening
See Carburizing
Nitriding

Cast iron
See Chromium iron
White iron

Casting
See Continuous casting
Ingot casting
Melt spinning

Casting defects, Impurity effects
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A

Casting machines
See Continuous casting machines

Castings
See also Continuous cast shapes
Die castings
Permanent mold castings

Castings, Mechanical properties
The Effect of Cast Structure on the Ductility of Steel Above 900°C. 285-289B
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A
Fracture Toughness of CF8 Castings at 4K. 1179-1188A

Cation exchanging
Modeling of Noncatalytic Fluid—Solid Reactions: the Quasisteady State Assumption. 49-53B

Caustic soda
See Sodium hydroxide

Cavitation
Development of Forming Limits for Superplastic Formed Fine-Grain 7475 Al. 1593-1598A
Cavity Growth on a Sliding Grain Boundary. 2289-2293A

Cavitation, Pressure effects
Control of Superplastic Cavitation by Hydrostatic Pressure. 1583-1591A

Cells
See Electrolytic cells

Cellular precipitates, Crystal lattices
A Study of a Cellular Phase Transformation in the Ternary Ni—Al—Mo Alloy System. 1561-1571A

Cementation
Screening Design Test for Cobalt Cementation From Zinc Electrolyte. 495-497B

Cemented carbides, Mechanical properties
High-Temperature Hardness of Tungsten Carbide. 1625-1629A

Cementite, Crystal growth
Development and Application of Growth Models for Grain Boundary Allotriomorphs of a Stoichiometric Compound in Ternary Systems. 1261-1269A

Cerium, Alloying additive
The Effect of Cerium on High-Temperature Tensile and Creep Behavior of a Superalloy. 611-621A
The Effects of Cerium Additions on the High-Temperature Corrosion Behavior of Fe—30Cr—5Al Alloy in 80% Na_2SO_4—20% NaCl Molten Salt. 2131-2142A
Auger Analysis of Fractured Surfaces of Temper Embrittled 2.25Cr—1Mo Steel Containing Rare Earth Additions. 2558-2560A

CGF forging process
See Forging

Chalcogenides
See Sulfides

Chalcopyrite, Beneficiation
Oxidation Aspects of the Lime-Concentrate-Pellet Roasting Process. 589-604B

Chalcopyrite, Reduction (chemical)
A Partial Equilibrium Model to Characterize the Precipitation of Ferric Ion During the Leaching of Chalcopyrite With Ferrite Sulfate. 5-15B
Kinetics and Sulfur Fixation in the Reduction or Oxidation of Metal Sulfides Mixed With Lime. 175-180B

Chapmanizing
See Nitriding

Charge materials
Reactions of Sinter in a Lead Blast Furnace. 617-623B

Charge transfer
Electron Charge Transfer in Liquid Copper—Tin Alloys. 1748-1750A

Charpy impact tests
See Impact tests

Chemical analysis
See Conductiometric analysis
Depth profiling
Microanalysis

Chemical attack
See Intergranular corrosion

Chemical composition, Welding effects
Comparison of Theoretically Predicted and Experimentally Determined Submerged Arc Weld Deposit Compositions. 510-513B

Chemical equilibrium
Oxide—Sulfate Equilibria in the Magnesium, Nickel and Manganese Systems Measured by a Solid K_2SO_4 Concentration Cell. 117-124B
Statistical Modeling of Solvent Extraction Equilibria: Extraction of Copper From Sulfuric Acid and Ammoniacal Solutions by Mixtures of LIX 64N and SME 529. 159-170B
A Solid-State E.M.F. Study of the Pyrrhotite—Magnetite Equilibrium in the Temperature Interval 850 to 1275K. 459-464B
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B

Chemical kinetics
See Reaction kinetics

Chemical processes
See Reactions (chemical)

Chemical processing industry
See Reactions (chemical)

Chemical properties
See Heat of formation
Valence

Chemical reactions
See Reactions (chemical)

Chemical reduction
See Reduction (chemical)

Chemical tests
See Conductiometric analysis
Depth profiling
Microanalysis

Chemistry
See Surface chemistry
Thermochemistry

Chip formation
Austenitization of Steel During Chip Formation. 1743-1745A

Chipless machining
See Electric discharge machining

Chlorides
See also Sodium chloride

Chlorides, Crystal growth
Optical Observations of Unidirectional Solidification in Microgravity. 2163-2167A

Chlorides, Environment
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A

Chlorides, Reactions (chemical)
The Vapor—Liquid Equilibria of the Aluminum Chloride—Ferric Chloride System. 301-303B

Chlorination
Internal Chloridation of Dilute Ni—Cr Alloys. 509B

Chlorine, Diffusion
Internal Chloridation of Dilute Ni—Cr Alloys. 509B

Chromium, Alloying elements
Internal Chloridation of Dilute Ni—Cr Alloys. 509B

Chromium, Extraction
On Binary P-T Phase Diagrams. 231-237B

Chromium, Materials substitution
Discussion of an Examination of Chromium Substitution in Stainless Steels (and Author's Reply). 2185-2187A

Chromium iron, Directional solidification
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A

Chromium molybdenum nickel steels
See Nickel chromium molybdenum steels

Chromium molybdenum steels
See also Chromium molybdenum vanadium steels
Nickel chromium molybdenum steels

Chromium molybdenum steels, Corrosion
On the Corrosion Fatigue Behavior of a Modified SAE 4135 Type Steel in a H_2S Environment. 1737-1742A
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Chromium molybdenum steels, Heat treatment
Heat Flow During the Laser Transformation Hardening of Cylindrical Bodies. 1859-1867A

Chromium molybdenum steels, Mechanical properties
Restoration of Elevated Temperature Tensile Strength in 2.25Cr—1Mo Steel. 845-855A
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A
The Evaluation of Tempered Martensite Embrittlement in 4130 Steel by Instrumented Charpy V-Notch Testing. 1109-1119A
Localized Heat Generation During Fracture of Cyclically Loaded Steel. 1409-1419A
The Effect of Titanium on Creep Strength in 2.25Cr—1Mo Steels. 1443-1449A
Comparison of the Plane Strain Crack Arrest Fracture Toughness of 4340, 4140 and 1340 Steel. 1459-1465A
Crack Propagation of Steels During Low-Cycle Thermal-Mechanical and Isothermal Fatigue at Elevated Temperatures. 1641-1648A
Auger Analysis of Fractured Surfaces of Temper Embrittled 2.25Cr—1Mo Steel Containing Rare Earth Additions. 2558-2560A

Chromium molybdenum vanadium steels, Heat treatment
The Sintering of Creep-Induced Cavities in a Low-Alloy Ferritic Steel (1Cr1Mo0.75V). 679-686A

Chromium molybdenum vanadium steels, Mechanical properties
The Effects of Trace Impurities on the Ductility of a Cr—Mo—V Steel at Elevated Temperatures. 571-580A
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A
Effects of Load Ratio and Temperature on the Near-Threshold Fatigue Crack Propagation Behavior in a CrMoV Steel. 1631-1640A

Chromium nickel molybdenum steels
See Nickel chromium molybdenum steels

Chromium nickel steels
See Nickel chromium steels

Chromium steels
See Austenitic stainless steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium vanadium steels
Ferritic stainless steels
Martensitic stainless steels
Nickel chromium molybdenum steels
Nickel chromium steels
Stainless steels

Chromium vanadium steels
See also Chromium molybdenum vanadium steels

Chromium vanadium steels, Powder technology
Enhanced Stress Corrosion Resistance From Steels Having a Dual-Phase Austenite—Martensite Microstructure. 1921-1928A

Cleavage
Statistical Aspects of Cleavage Fracture in Steel. 1349-1355A
A Local Criterion for Cleavage Fracture of a Nuclear Pressure Vessel Steel. 2277-2287A

Cleavage, Corrosion effects
Oxide Scale Induced Cleavage Fracture in an ODS Fe—Cr—Al Alloy. 1516-1518A

Coal
A Kinetic Study of Leaching of Coal Pyrite With Nitric Acid. 317-324B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. I.—Effect of Some Operational Variables. 375-381B

Coal gasification
Reaction Rates for Sulfur Fixation With Iron at 1100 to 1275K. 291-300B
Corrosion of 310 Stainless Steel in H_2—H_2O—H_2S Gas Mixtures: Studies at Constant Temperature and Fixed Oxygen Potential. 295-305A

Coal oil
See Kerosene

Coating
See Anodizing
Painting

Coatings
See Anodic coatings

Cobalt, Alloying additive
Enhanced Superplasticity and Strength in Modified Ti—6Al—4V Alloys. 2535-2544A

Cobalt, Diffusion
The Mechanical Stability of Austenite in Maraging Steels. 801-808A

Cobalt, Extraction
Stoichiometry of Liquid—Liquid Extraction of Nickel and Cobalt by LIX63. 41-47B
Cobalt Extraction in Ammoniacal Solution: Electrochemical Effect of Metallic Iron. 571-576B

Cobalt, Impurities
The Effects of Certain Impurities and Their Interactions on Zinc Electrowinning. 645-655B

Cobalt, Reactions (chemical)
Screening Design Test for Cobalt Cementation From Zinc Electrolyte. 495-497B

Cobalt, Solubility
Non-Steady-State Rates of Dissolution of Iron and Cobalt in Liquid Copper Under Static Conditions. 667-672B

Cobalt, Ternary systems
Predominance Area Diagrams of the System Co—S—O Between 583 and 1148K. 506-509B

Cobalt base alloys, Mechanical properties
High-Cycle Fatigue of (Fe, Ni, Co)$_3$V Type Alloys. 1997-2003A

Cobalt base alloys, Oxidation
Fatigue Oxidation Interaction in a Superalloy—Application to Life Prediction in High-Temperature Low-Cycle Fatigue. 141-149A

COD
See Crack opening displacement

Coercive force, Microstructural effects
Correlation Between Microstructure and Coercivity of Amorphous $(Fe_{0.82}B_{0.18})_{0.90}Tb_{0.05}La_{0.05}$ Alloy Ribbons. 953-961A

Coercivity
See Coercive force

Cold cracking (welds)
See Weld defects

Cold ductility
See Ductility

Cold formability
See Formability

Cold forming
See Cold working

Cold reduction
See Cold working

Cold shortness
See Brittleness

Cold working
See also Stretch forming
The Enhancement of Hydrogen Attack in Steel by Prior Deformation. 695-699A
The Mechanical Stability of Austenite in Maraging Steels. 801-808A
Effect of Cold Working on the Hydrogen Trapping Phenomena in Pure Iron. 1299-1305A
Effect of Prestrain on the Mechanical Properties of Eutectoid Steel. 1379-1388A

Columbium
See Niobium

Columbium base alloys
See Niobium base alloys

Columbium compounds
See Niobium compounds

Compacting
See Hot isostatic pressing
Isostatic pressing

Compacts
See Powder compacts

Compatibility
Solid-State SiC/Ni Alloy Reaction. 355-364A

Compliance (elasticity)
See Modulus of elasticity

Composite materials, Mechanical properties
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B

Composite materials, Reactions (chemical)
Chemistry and Distribution of Phases Produced by Solid State SiC/NiCrAl Reaction. 781-790A

Compositions
See Chemical composition

Compression strength
See Compressive strength

Compression tests
On the Deformation of Flow Properties From Compression Tests. 155-156A

Compressive modulus
See Modulus of elasticity

Compressive strength
The Mechanical Properties of Cellular Solids. 1755-1769A

Compressive strength, Heating effects
Strength of Initially Virgin Martensites at −196°C After Aging and Tempering. 1007-1012A

Compressive yield strength
See Compressive strength

Computation
The Analysis and Calculation of Equilibria in Complex Metallurgical Systems. 701-710B

Computer programs
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B
Volatization of Arsenic and Antimony in Copper Matte Converting. 303-306B
Composition of Liquid-Saturated Selenium Vapor. 308-311B

Computer simulation
Development and Application of Growth Models for Grain Boundary Allotriomorphs of a Stoichiometric Compound in Ternary Systems. 1261-1269A
Three-Dimensional Heat Flow and Solidification During the Autogenous GTA Welding of Aluminum Plates. 2245-2253A

Computers
See Digital computers

Computing
See Computation

Concast
See Continuous casting

Concentrating
Concentration of Europium (III) With Supported Liquid Membrane Containing a Xylene Solution of Di-2-Ethylhexyl Phosphoric Acid. 25-31B

Concentration (process)
See Concentrating

Concentration (stress)
See Stress concentration

Conducting sheet analog
See Heat transmission

Conductiometric analysis
Differential Resistivity Measurement for Monitoring Annealing. 175-182A

Conductivity
See Resistivity

Conductivity (electrical)
See Resistivity

Constitutional diagrams
See Phase diagrams

Construction
See Honeycomb construction
Sandwich construction

Containers, Materials selection
Consideration of Yttria for Vacuum Induction Melting of Titanium. 497-499B

Contaminants
Fatigue Crack Growth Rate of Ti—6Al—4V Prealloyed Powder Compacts. 1524-1528A

Continuous anodizing
See Anodizing

Continuous cast shapes, Mechanical properties
The Effect of Cast Structure on the Ductility of Steel Above 900°C. 285-289B

Continuous casting
A Mathematical Model of a Drum and Ring Horizontal Strip Casting Process. 487-493B
Hot Film Anemometry in Molten Woods Metal. 499-502B

Continuous casting machines, Design
A Mathematical Model of a Drum and Ring Horizontal Strip Casting Process. 487-493B

Contours
See Shape

Control
See Fume control

Controlled atmospheres
Precipitation in CF-8M Duplex Stainless Steel Welds. 37-44A
The Development of Nitrogen Concentration Profiles on Nitriding Iron. 395-399A

Controlled rolling
Cleavage Delamination in Impact Tested Warm Rolled Steel. 2487-2496A
Texture-Induced Cleavage Delamination of Warm Rolled Low-Carbon Steel. 2563-2566A

Convection
Turbulent Natural Convection Along a Vertical Electrode. 633-643B
Fluid Flow Into a Dendritic Array Under Forced Convection. 733-741B

Coolants, Reactions (chemical)
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B

Cooling
See Supercooling

Cooling rate
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A
Kinetics of Austenite—Pearlite Transformation in Eutectoid Carbon Steel. 1803-1815A
Process and Structural Aspects of Melt-Spun Nickel-Base Superalloy Ribbons. 1817-1823A
Microstructural Modification of Austenitic Stainless Steels by Rapid Solidification. 1833-1841A
Microstructure and Mechanical Properties of Zn—Al Alloys at Room Temperature. 1931-1934A

Cooling systems
Pool Boiling Cooling for Melt Spinning Quench Wheels. 71-76B

Copper, Alloying elements
Further Comments on Grain Boundary Wetting in Liquid Phase Sintered Fe—Cu Alloys. 977-978A

Copper, Binary systems
A Thermodynamic Analysis of the Cu—O System With an Associated Solution Model. 473-481B
The Kinetics of Disperse Order Development in Alpha-CuAl Alloys. 875-880A
Electron Charge Transfer in Liquid Copper—Tin Alloys. 1748-1750A

Copper, Diffusion
Diffusivity and Solubility of Oxygen in Solid Copper Using Potentiostatic and Potentiometric Techniques. 673-677B
Interface Equilibrium in Alpha/Beta Cu—Al Diffusion Couples. 1224-1227A

Copper, Extraction
A Partial Equilibrium Model to Characterize the Precipitation of Ferric Ion During the Leaching of Chalcopyrite With Ferrite Sulfate. 5-15B
Leaching Kinetics of Malachite in Ammonium Carbonate Solutions. 33-40B
Modeling of Noncatalytic Fluid—Solid Reactions: the Quasisteady State Assumption. 49-53B
An Equilibrium Study of the Hydrogen Reduction of Copper Sulfates. 136-139B
Chemical Equilibrium Studies on the Copper—Sulfuric Acid—Kelex 100—Xylene System. 153-158B
Statistical Modeling of Solvent Extraction Equilibria: Extraction of Copper From Sulfuric Acid and Ammoniacal Solutions by Mixtures of LIX 64N and SME 529. 159-170B
Vaporization Studies of Calcium Arsenate Under Neutral Conditions and in Contact With Copper Pyrometallurgical Slags. 171-174B
Kinetics and Sulfur Fixation in the Reduction or Oxidation of Metal Sulfides Mixed With Lime. 175-180B
Volatization of Arsenic and Antimony in Copper Matte Converting. 303-306B
A Mathematical Model for the Solution Mining of Primary Copper Ore: II.—Leaching by Solution Containing Oxygen Bubbles. 553-558B
Cupric Chloride Leaching of Model Sulfur Compounds for Simple Copper Ore Concentrates. 559-570B
Oxidation Aspects of the Lime-Concentrate-Pellet Roasting Process. 589-604B

Copper, Heat treatment
Differential Resistivity Measurement for Monitoring Annealing. 175-182A

Copper, Mechanical properties
Grain Boundary Sliding and Stress Concentration During Creep. 531-545A
Elastic—Plastic Analysis of Indentation Damages in Copper: Work-Hardening and Residual Stress.—I. 2415-2421A

Copper, Reactions (chemical)
Re-Evaluation of the Activity of Arsenic in Molten Copper. 502-504B

Copper, Recovering
A Mathematical Model for the Solution Mining of Primary Copper Ore. I.—Leaching by Oxygen-Saturated Solution Containing No Gas Bubbles. 541-551B

Copper, Refining
Turbulent Natural Convection Along a Vertical Electrode. 633-643B

Copper, Solubility
A Thermodynamic Study of Silica-Saturated Iron Silicate Slags in Equilibrium With Liquid Copper. 101-104B
Leaching of Bornite in Acidified Ferric Chloride Solutions. 577-588B
Non-Steady-State Rates of Dissolution of Iron and Cobalt in Liquid Copper Under Static Conditions. 667-672B

Copper, Ternary systems
Evaluation of an Empirical Representation of Ternary Diffusion Paths in a System With Constant Diffusion Coefficients. 2479-2485A

Copper base alloys
See also Brasses
Bronzes

Copper base alloys, Diffusion
Identification of Zero-Flux Planes and Flux Reversals in Several Studies of Ternary Diffusion. 857-864A
An Analysis of Concentration Profiles for Fluxes, Diffusion Depths and Zero-Flux Planes in Multicomponent Diffusion. 1851-1858A
A Study of the Chemical Composition of Grain Boundaries and Creep Cavity Surfaces in a Cu—Sb Alloy. 2447-2454A

Copper base alloys, Mechanical properties
The Effects of Segregation on the Kinetics of Intergranular Cavity Growth Under Creep Conditions. 563-570A
Fatigue of Cu—1Cd. 1327-1332A
Investigation of the Early Stages of Deformation of Two-Phase Copper—Aluminum Alloys. 2407-2413A

Copper base alloys, Microstructure
The Microstructure of Rapidly Solidified Beta-Phase Cu—Zn—Al Alloys. 2229-2234A

Copper base alloys, Phase transformations
Martensitic Transformation Cycling Effects in Cu—Zn—Al Shape Memory Alloys. 33-38A

Copper compounds, Reactions (chemical)
Leaching Kinetics of Malachite in Ammonium Carbonate Solutions. 33-40B

Copper compounds, Reduction (chemical)
An Equilibrium Study of the Hydrogen Reduction of Copper Sulfates. 136-139B

Copper mattes
Volatization of Arsenic and Antimony in Copper Matte Converting. 303-306B

Copper mattes, Reactions (chemical)
Vapor Pressure Determination of Arsenic Activity in a Molten Cu—Fe—S Matte. 253-258B

Copper ores
See also Bornite
Chalcopyrite
A Mathematical Model for the Solution Mining of Primary *Copper Ore. I.—Leaching by Oxygen-Saturated Solution* Containing No Gas Bubbles. 541-551B
A Mathematical Model for the Solution Mining of Primary Copper Ore: II.—Leaching by Solution Containing Oxygen *Bubbles.* 553-558B
Cupric Chloride Leaching of Model Sulfur Compounds for Simple Copper Ore Concentrates. 559-570B

Copper ores, Reduction (chemical)
Vapor Pressure Determination of Arsenic Activity in a Molten Cu—Fe—S Matte. 253-258B

Core hardness
See Hardness

Corrodents
See Corrosion environments

Corrosion
See also Carburization (corrosion)
Corrosion fatigue
Corrosion mechanisms
Hot gas corrosion
Intergranular corrosion
Scale (corrosion)
Sulfurization

Corrosion, High temperature effects
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A

Corrosion cracking
See Stress corrosion cracking

Corrosion effects
See Scale (corrosion)

Corrosion environments
Behavior of Model Fe—Ni—Cr Alloys During Stress-Rupture in Sulfidizing and Oxidizing Environments. 2063-2075A

Corrosion fatigue
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A

Corrosion fatigue, Alloying effects
On the Corrosion Fatigue Behavior of a Modified SAE 4135 Type Steel in a H_2S Environment. 1737-1742A

Corrosion mechanisms
See also Intergranular corrosion
Scale (corrosion)
Internal Chloridation of Dilute Ni—Cr Alloys. 509B

Corrosion products
See Scale (corrosion)

Corrosion rate
Corrosion of 310 Stainless Steel in H_2—H_2O—H_2S Gas Mixtures: Studies at Constant Temperature and Fixed Oxygen *Potential.* 295-305A
Sensitization of 12 Wt.-% Chromium, Titanium-Stabilized Ferritic Stainless Steel. 1721-1728A

Corrosion resistance
Kinetics of the F, F_2/Gd(s,v) Reactions. 53-60A
Enhanced Stress Corrosion Resistance From Steels Having *a Dual-Phase Austenite—Martensite Microstructure.* 1921-1928A

Corrosion resistance, Alloying effects
The Effects of Heat Treatment and Composition on the *Stress Corrosion Cracking Resistance of Inconel Alloy X-*750. 133-139A
The Effects of Cerium Additions on the High-Temperature Corrosion Behavior of Fe—30Cr—5Al Alloy in 80% Na_2SO_4—20% NaCl Molten Salt. 2131-2142A

Corrosion resistance, Heating effects
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A

Cost savings
See Economics

Crack closure
Comparison of the Plane Strain Crack Arrest Fracture Toughness of 4340, 4140 and 1340 Steel. 1459-1465A

Crack closure, Microstructural effects
Roughness-Induced Crack Closure: An Explanation for Microstructurally Sensitive Fatigue Crack Growth. 421-433A

Crack growth
See Crack propagation

Crack opening displacement
Wear Debris Due to Mode II Opening of Mode I Fatigue Cracks in an Aluminum Alloy. 1227-1230A

Crack propagation
Fatigue Oxidation Interaction in a Superalloy—Application to *Life Prediction in High-Temperature Low-Cycle Fatigue.* 141-149A
Effect of Fracture Surface Roughness on Growth of Short Fatigue Cracks. 153-155A
Effects of Hydrogen on Near-Threshold Crack Propagation in Niobium. 701-707A
Crack Propagation of High-Strength Steels in a Gaseous Hydrogen Atmosphere. 717-726A
Metallography of Fatigue Crack Initiation in an Overaged High-Strength Aluminum Alloy. 931-938A
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A
Fatigue Crack Initiation and Microcrack Propagation in X7091 Type Aluminum P/M Alloys. 1189-1197A
Effect of Cold Working on the Hydrogen Trapping Phenomena in Pure Iron. 1299-1305A
Deuterium Transport and Trapping in Aluminum Alloys. 1307-1312A
Statistical Aspects of Cleavage Fracture in Steel. 1349-1355A
Localized Heat Generation During Fracture of Cyclically Loaded Steel. 1409-1419A
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A
Steady State Vacancy Concentration Around a Plastic Crack. 1615-1625A
Crack Propagation of Steels During Low-Cycle Thermal-Mechanical and Isothermal Fatigue at Elevated Temperatures. 1641-1648A
Effect of Strain Wave Shape on Low-Cycle Fatigue Crack Propagation of SUS304 Stainless Steel at Elevated Temperatures. 1649-1659A
On Fatigue Crack Propagation of Titanium Alloys Under Dwell Time Conditions. 2178-2181A
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A

Crack propagation, Alloying effects
Hydrogen-Induced Cracking in 4340-Type Steel: Effects of *Composition, Yield Strength and Hydrogen Pressure.* 881-888A
The Effects of Boron and Zirconium on the Creep and Fatigue Crack Growth Behavior of a Nickel-Base Superalloy. 895-901A

Crack propagation, Environmental effects
Determination of Fatigue Crack Growth in Incoloy Alloy 800 in Molten Nitrate Salt. 314-317A
Fatigue of Stainless Steel in Hydrogen. 2085-2090A

Crack propagation, Heating effects
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A
The Effects of Heat Treatment on Fracture Toughness and Fatigue Crack Growth Rates in 440C and BG42 Steels. 1899-1906A

Crack propagation, Impurity effects
*Fatigue Crack Growth Rate of Ti—6Al—4V Prealloyed Pow*der Compacts. 1524-1528A

Crack propagation, Microstructural effects
Roughness-Induced Crack Closure: An Explanation for Microstructurally Sensitive Fatigue Crack Growth. 421-433A
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A
*Low-Cycle Fatigue of Ti—Mn Alloys: Microstructural As*pects of Fatigue Crack Growth. 1481-1486A
The Effect of Grain Size on Fatigue Growth of Short Cracks. 1697-1705A
Fatigue of Annealed and Cold Worked Stable and Unstable Stainless Steels. 2077-2084A
The Effect of Microstructure on 650°C Fatigue Crack Growth in P/M Astroloy. 2301-2308A

Crack propagation, Stress effects
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A
*Fatigue Crack Propagation in Intercritically Tempered Fe—*9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A

Crack propagation, Temperature effects
*Effects of Load Ratio and Temperature on the Near-*Threshold Fatigue Crack Propagation Behavior in a CrMoV Steel. 1631-1640A

Crack resistance
See Crack propagation

Cracking (fracturing)
See Stress corrosion cracking

Cratering (welding)
See Weld defects

Creep (materials)
See also Creep life
Creep rate
Creep rupture strength
Creep strength
Grain Boundary Sliding and Stress Concentration During Creep. 531-545A
Cavity Growth on a Sliding Grain Boundary. 2289-2293A

Creep (materials), Diffusion effects
A Study of the Chemical Composition of Grain Boundaries and Creep Cavity Surfaces in a Cu—Sb Alloy. 2447-2454A

Creep (materials), Stress effects
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al *Alloy at 973 to 1073K.* 1207-1211A

Creep life, Heating effects
The Sintering of Creep-Induced Cavities in a Low-Alloy Ferritic Steel (1Cr1Mo0.75V). 679-686A

Creep limit
See Creep (materials)

Creep properties
See Creep (materials)

Creep rate
Anelastic Relaxation Controlled Cyclic Creep and Cyclic Stress Rupture Behavior of an Oxide Dispersion-Strengthened Alloy. 241-247A
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A

Creep rate, Alloying effects
The Effects of Boron and Zirconium on the Creep and Fatigue Crack Growth Behavior of a Nickel-Base Superalloy. 895-901A
Creep Deformation of TiAl and TiAl + W Alloys. 2170-2174A

Creep rate, Diffusion effects
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A
The Effects of Segregation on the Kinetics of Intergranular Cavity Growth Under Creep Conditions. 563-570A
High-Temperature Embrittlement of Nickel and Ni—Cr Alloys by Trace Elements. 595-610A

Creep rate, Environmental effects
Behavior of Model Fe—Ni—Cr Alloys During Stress-Rupture in Sulfidizing and Oxidizing Environments. 2063-2075A

Creep rate, Heating effects
Cyclic Creep and Stress Rupture of a Mechanically Alloyed Oxide Dispersion and Precipitation Strengthened Nickel-Base Superalloy. 1435-1441A

Creep rate, High temperature effects
X-Ray Diffraction Study of Subgrain Misorientation During High-Temperature Creep of Tin Single Crystals. 117-126A

Creep rate, Microstructural effects
An Investigation on the Creep and Fracture Behavior of Cast Nickel-Base Superalloy IN738LC. 2329-2335A

Creep rate, Stress effects
Effect of Stress Reductions on the Stress Exponent and Subgrain Size in an Al—Zn Alloy. 2309-2318A

Creep resistance
See Creep strength

Creep rupture strength
Anelastic Relaxation Controlled Cyclic Creep and Cyclic Stress Rupture Behavior of an Oxide Dispersion-Strengthened Alloy. 241-247A
Crack and Cavity Nucleation at Interfaces During Creep. 547-561A
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A
A Local Criterion for Cleavage Fracture of a Nuclear Pressure Vessel Steel. 2277-2287A

Creep rupture strength, Alloying effects
The Effect of Cerium on High-Temperature Tensile and Creep Behavior of a Superalloy. 611-621A

Creep rupture strength, Environmental effects
Behavior of Model Fe—Ni—Cr Alloys During Stress-Rupture in Sulfidizing and Oxidizing Environments. 2063-2075A

Creep rupture strength, Heating effects
Cyclic Creep and Stress Rupture of a Mechanically Alloyed Oxide Dispersion and Precipitation Strengthened Nickel-Base Superalloy. 1435-1441A

Creep rupture strength, High temperature effects
The Effects of Trace Impurities on the Ductility of a Cr—Mo—V Steel at Elevated Temperatures. 571-580A

Creep rupture strength, Microstructural effects
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A

Creep strength
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Creep strength, Alloying effects
Residual and Trace Element Effects on the High-Temperature Creep Strength of Austenitic Stainless Steels. 581-593A
The Effect of Titanium on Creep Strength in 2.25Cr—1Mo Steels. 1443-1449A

Creep strength, Composition effects
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A

Creeping
See Creep (materials)

Critical materials
See Strategic materials

Cross tension test
See Tension tests

Crushing strength
See Compressive strength

Cryogenic properties
Microstructural Sources of Toughness in QLT-Treated 5.5Ni Cryogenic Steel. 93-103A
Fracture Toughness of CF8 Castings at 4K. 1179-1188A

Cryogenic temperature
See Cryogenics

Cryogenics
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A

Crystal defects
See also Dislocations
Interstitial impurities
Lattice vacancies
Screw dislocations
An Atom Probe Study of the Aging of Iron—Nickel—Carbon Martensite. 1021-1024A
Hydrogen Traps, Repellers and Obstacles in Steel: Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A
Electromigration of Hydrogen and Deuterium in Tantalum: Isotope Effect. 2255-2260A
The Substructure of (252)$_1$ Martensite Formed in an Fe—8Cr—1C Alloy. 2455-2468A

Crystal orientation
See Crystal structure

Crystal structure
Characteristics of Lath Martensite. I.—Crystallographic and Substructural Features. 809-822A
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A
A Study of a Cellular Phase Transformation in the Ternary Ni—Al—Mo Alloy System. 1561-1571A
Microstructures of the Commercial 7075 Al Alloy in the T651 and T7 Tempers. 1957-1965A
Structure of Transient Oxides Formed on NiCrAl Alloys. 2143-2161A
DO_3-Domain Growth Kinetics in the Fe—20 At.% Al—5 At.% Si Alloy. 2435-2437A

Crystal structure, Cooling effects
X-Ray Diffraction Study on the Structure of Rapidly Solidified Fe—Al—C and Fe(Mn,Ni)—Al—C Alloys. 973-975A

Crystallinity
See Crystal structure

Crystallization
See also Recrystallization
Correlation Between Microstructure and Coercivity of Amorphous $(Fe_{0.82}B_{0.18})_{0.90}Tb_{0.05}La_{0.05}$ Alloy Ribbons. 953-961A
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A

Crystallography
Characteristics of Lath Martensite. I.—Crystallographic and Substructural Features. 809-822A
Characteristics of Lath Martensite. II.—The Martensite/Austenite Interface. 823-834A
Characteristics of Lath Martensite. III.—Some Theoretical Considerations. 835-844A
Some Crystallographic Characteristics of the (252)$_1$ Martensite Transformation in Iron Alloys. 2469-2477A

Crystals
See Single crystals

Cupping
See Deep drawing

Current efficiency
The Hall—Héroult Cell: Some Design Alternatives Examined by a Mathematical Model. 63-70B
Screening Design Test for Cobalt Cementation From Zinc Electrolyte. 495-497B

Curves
See Stress strain curves

Cutting
See Electric discharge machining

Cycles
See Thermal cycling

Cyclical heating
See Thermal cycling

Cylinders, Heat treatment
Heat Flow During the Laser Transformation Hardening of Cylindrical Bodies. 1859-1867A

Damage
See Radiation damage

Decomposing
See Decomposition

Decomposition
See also Decomposition reactions
Eutectoid decomposition
Phase decomposition
Pyrolysis
The Decomposition of Wustite Under Mixed Chemical Reactions/Mass Transport Limitations. 753-759B

Decomposition reactions
See also Pyrolysis
Thermochemical Decomposition of Hydrogen Sulfide With Nickel Sulfide. 347-352B
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B

Decontamination
Insoluble Surface Carbon on Steel Sheet Annealed in Hydrogen—Nitrogen Atmosphere. 369-373B

Deep carburizing
See Carburizing

Deep drawability
See Drawability

Deep drawing
On the Strain Dependence of Plastic-Strain Ratio of Deep Drawing Sheet Steels. 1521-1523A

Deep hardening
See Hardening

Defects
See Casting defects
Crystal defects
Dislocations
Interstitial impurities
Lattice vacancies
Screw dislocations
Weld defects

Deformability
See Formability

Deformation
See Plastic deformation

Dendrite
See Dendritic structure

Dendritic structure
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A
Fluid Flow Into a Dendritic Array Under Forced Convection. 733-741B
Phase Composition and Phase Stability of a High-Chromium Nickel-Based Superalloy, IN939. 1771-1783A

Densification
Practical Applications of Hot Isostatic Pressing Diagrams: Four Case Studies. 211-221A

Density
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A

Deposition
See Anodizing
Painting

Deposits
Insoluble Surface Carbon on Steel Sheet Annealed in Hydrogen—Nitrogen Atmosphere. 369-373B

Depth profiling
An Analysis of Concentration Profiles for Fluxes, Diffusion Depths and Zero-Flux Planes in Multicomponent Diffusion. 1851-1858A
Ion-Beam Profiling of ^3He in Tritium-Exposed Type 304L and Type 21-6-9 Stainless Steels. 2261-2267A

Desiccants
See Calcium sulfate

Desorption
The Diffusivity of Hydrogen in Niobium-Stabilized Stainless Steel. 1869-1874A

Desorption, Alloying effects
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N—^{14}N$ Isotope Exchange Reaction. 441-449B

Desulfurizing
Kinetics and Mechanism of the Desulfurization of Liquid Blast Furnace Slags by Ar—H_2O Gas Mixtures. 221-230B
The Rates of Desulfurization of Liquid Iron by Solid CaO and *CaO-Saturated Liquid Iron Oxide at 1600°C.* 259-266B
Reaction Rates for Sulfur Fixation With Iron at 1100 to 1275K. 291-300B
A Kinetic Study of Leaching of Coal Pyrite With Nitric Acid. 317-324B

Deuterium, Diffusion
Thermotransport of Hydrogen and Deuterium in Vanadium—*Niobium, Vanadium—Titanium and Vanadium—Chromium* Alloys. 871-874A
Deuterium Transport and Trapping in Aluminum Alloys. 1307-1312A
Electromigration of Hydrogen and Deuterium in Tantalum: *Isotope Effect.* 2255-2260A

Diagrams
See Phase diagrams
S N diagrams

Die castings, Mechanical properties
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B

Diffraction
See Diffraction patterns

Diffraction patterns
Method of Analysis of the Regularity of Lamellar Eutectic Structures by Diffraction of a Laser Beam. 105-108B

Diffusion
See also Electrodiffusion
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A
Ternary Diffusion: the ($^2\bar{D}$) Matrix of an Ideal Solid Solution. 45-51A
Early Stages of Aging and Tempering of Ferrous Martensites. 1057-1065A
Interface Equilibrium in Alpha/Beta Cu—Al Diffusion Couples. 1224-1227A
Deuterium Transport and Trapping in Aluminum Alloys. 1307-1312A
An Analysis of Concentration Profiles for Fluxes, Diffusion Depths and Zero-Flux Planes in Multicomponent Diffusion. 1851-1858A

Diffusion, Alloying effects
Grain Boundary Segregation in Nickel and Binary Nickel Alloys Doped With Sulfur. 865-870A

Diffusion, Composition effects
Identification of Zero-Flux Planes and Flux Reversals in Several Studies of Ternary Diffusion. 857-864A

Diffusion, Heating effects
Reactions and Diffusion Between an Aluminum Film and a Titanium Substrate. 61-66A
Thermotransport of Hydrogen and Deuterium in Vanadium—*Niobium, Vanadium—Titanium and Vanadium—Chromium* Alloys. 871-874A

Diffusion, Microstructural effects
*Discussion of "Permeation Measurements of Hydrogen Trap*ping in 1045 Steel" and Reply. 156-158A

Diffusion, Radiation effects
Effects of X-Ray Irradiation on Hydrogen-Induced Phase Transformations in Stainless Steel. 151-152A

Diffusion coefficient
See Diffusion

Diffusion couples
See Diffusion

Diffusion layers
Solid-State SiC/Ni Alloy Reaction. 355-364A
Size Effect, Internal Stress and Diffusion Driven Boundary *Motion.* 1579-1582A

Diffusion layers, Crystal lattices
Titanium Alpha-Nitrogen Solid Solution Formed by High-*Temperature Nitriding: Diffusion of Nitrogen, Hardness and* Crystallographic Parameters. 1537-1543A

Diffusion layers, Heating effects
*Reactions and Diffusion Between an Aluminum Film and a Ti*tanium Substrate. 61-66A

Diffusion layers, Phases (state of matter)
*Phase Equilibria and Kinetics in the Solid-State Reaction Be*tween Silicon and NiCrAl. 1549-1560A

Diffusion rate
Carbon Diffusion in Mo_2C As Determined From Carburization of Molybdenum. 199-202A
An Analysis of Concentration Profiles for Fluxes, Diffusion *Depths and Zero-Flux Planes in Multicomponent Diffusion.* 1851-1858A

Diffusivity
Hydrogen Permeation and Diffusion in Niobium. 203-210A
Kinetic Enrichment of Hydrogen at Interfaces and Voids by Dislocation Sweep-In of Hydrogen. 385-393A
Diffusivity and Solubility of Oxygen in Solid Copper Using Potentiostatic and Potentiometric Techniques. 673-677B
Diffusivity of Hydrogen and Deuterium at Low Concentration in $Fe_{0.5}Ti_{0.5}$. 1573-1577A
The Diffusivity of Hydrogen in Niobium-Stabilized Stainless *Steel.* 1869-1874A
*Activity and Diffusivity of Oxygen in Tantalum- and Niobium-*Base Alloys. 2117-2123A
A Note on the Theoretical Treatment of Up-Hill Diffusion in *Compound Welds.* 2167-2170A
Hydrogen Traps, Repellers and Obstacles in Steel. Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A
Ion-Beam Profiling of ^3He in Tritium-Exposed Type 304L and Type 21-6-9 Stainless Steels. 2261-2267A

Diffusivity, Deformation effects
*Effect of Cold Working on the Hydrogen Trapping Phenom*ena in Pure Iron. 1299-1305A

Diffusivity, Impurity effects
Calculations of the Binding of Hydrogen to Fixed Interstitial Impurities in Nickel. 1257-1260A

Diffusivity, Low temperature effects
*Low-Temperature Diffusivity Measurements in the FeNi Sys*tem Using STEM Techniques. 2437-2439A

Diffusivity, Size effects
Size Effect, Internal Stress and Diffusion Driven Boundary Motion. 1579-1582A

Digital computers
*The Analysis and Calculation of Equilibria in Complex Metal*lurgical Systems. 701-710B

Dimensions
See Particle size

Dioxides
See Carbon dioxide
Sulfur dioxide
Titanium dioxide

Direct reduction
See also Hydrogen reduction
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. I.—Effect of Some Operational Variables. 375-381B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. II.—Effect of Kiln Geometry. 383-392B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. III.—Effect of Ring Formation Within the Kiln. 393-399B

Directional solidification
The Effect of Cast Structure on the Ductility of Steel Above 900°C. 285-289B

Directional solidification, Pressure effects
Optical Observations of Unidirectional Solidification in Microgravity. 2163-2167A

Directionally solidified eutectics, Crystal lattices
Method of Analysis of the Regularity of Lamellar Eutectic Structures by Diffraction of a Laser Beam. 105-108B

Discontinuous precipitates
See Cellular precipitates

Dislocation climb
See Dislocation mobility

Dislocation density
The Microstructure of Rapidly Solidified Beta-Phase Cu—Zn—Al Alloys. 2229-2234A

Dislocation mobility
X-Ray Diffraction Study of Subgrain Misorientation During High-Temperature Creep of Tin Single Crystals. 117-126A

Dislocations
See also Screw dislocations
Martensitic Transformation Cycling Effects in Cu—Zn—Al Shape Memory Alloys. 33-36A
Kinetic Enrichment of Hydrogen at Interfaces and Voids by Dislocation Sweep-In of Hydrogen. 385-393A
Steady State Vacancy Concentration Around a Plastic Crack. 1615-1625A
Deformation Kinetics of Commercial Ti-50A (0.5 At.% Oeq) at Low Temperatures ($T < 0.3T_m$). 2545-2556A

Dispersion hardening
A Comparison of the Microstructures of As-Cast and Laser Surface Melted Ti—8Al—4Y. 1979-1988A
Effects of Second-Phase Dispersoids on Deformation Behavior of Al—Li Alloys. 2174-2177A

Dispersion hardening alloys, Crystal growth
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Dispersion hardening alloys, Mechanical properties
Anelastic Relaxation Controlled Cyclic Creep and Cyclic Stress Rupture Behavior of an Oxide Dispersion-Strengthened Alloy. 241-247A
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B
Cyclic Creep and Stress Rupture of a Mechanically Alloyed Oxide Dispersion and Precipitation Strengthened Nickel-Base Superalloy. 1435-1441A
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A
Oxide Scale Induced Cleavage Fracture in an ODS Fe—Cr—Al Alloy. 1516-1518A

Dispersion hardening alloys, Phase transformations
The Effect of Fine Grain Size on the M_s Temperature in Fe—27Ni—0.025C Alloys. 1929-1931A

Displacements (lattice)
See Interstitial impurities

Dissociation energy
See Free energy of formation

Dissolution
A Kinetic Model of UO_2 Dissolution in Acid, H_2O_2 Solutions That Includes Uranium Peroxide Hydrate Precipitation. 325-334B
Acid Dissolution of Willemite ($(Zn,Mn)_2SiO_4$) and Hemimorphite ($Zn_4Si_2O_7(OH)_2H_2O$). 335-346B
Cobalt Extraction in Ammoniacal Solution: Electrochemical Effect of Metallic Iron. 571-576B
Leaching of Bornite in Acidified Ferric Chloride Solutions. 577-586B
Non-Steady-State Rates of Dissolution of Iron and Cobalt in Liquid Copper Under Static Conditions. 667-672B

Dissolving
See Dissolution

Distillation
The Vapor—Liquid Equilibria of the Aluminum Chloride—Ferric Chloride System. 301-303B

Domains
DO_3-Domain Growth Kinetics in the Fe—20 At.% Al—5 At.% Si Alloy. 2435-2437A

Drawability
Orientation Distribution Function Analysis of the Recrystallization Texture in a Boron-Treated Deep-Drawing Steel. 11-15A
On the Strain Dependence of Plastic-Strain Ratio of Deep Drawing Sheet Steels. 1521-1523A

Drawing
See Deep drawing
Wire drawing

Drawing (heat treatment)
See Tempering

Drill steels
See Tool steels

Drop tests
See Impact tests

Dual phase steels, Mechanical properties
Tempering of Manganese and Mn—Si—V Dual-Phase Steels. 1079-1087A
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A

Dual phase steels, Microstructure
Effect of Processing Variables on Resultant Microstructure and Properties of C—Mn—Si Steel. 308-312A

Dual phase steels, Structural hardening
Role of Retained Austenite on the Deformation of an Fe—0.07C—1.8Mn—1.4Si Dual-Phase Steel. 1497-1504A

Ductile brittle transition
Analyzing Statistical Variability of Fracture Properties. 687-693A
The Ductile to Brittle Transition in Tin—Lead Alloys Near Melting Temperatures. 939-946A
Some Surprising Features of the Plastic Deformation of Body-Centered Cubic Metals and Alloys. 1237-1256A
Fractographic Observations of Cleavage Initiation in the Ductile-Brittle Transition Region of a Reactor-Pressure-Vessel Steel. 1934-1937A

Ductile brittle transition, Microstructural effects
Microstructural Sources of Toughness in QLT-Treated 5.5Ni Cryogenic Steel. 93-103A
The Effect of Cast Structure on the Ductility of Steel Above 900°C. 285-289B
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A
Effects of Microstructure on Fracture Toughness of a High-Strength Low-Alloy Steel. 2055-2061A

Ductile fracture, Microstructural effects
The Influence of the $M_{23}(C,N)_6$ Compound on the Mechanical Properties of Type 422 Stainless Steel. 1395-1408A

Ductile fracture, Pressure effects
Laboratory Extrusion of Nb_3Sn. 2295-2299A

Ductility
Plastic Constraint and Ductility in Tensile Notched Specimens of Amorphous $Pd_{78}Cu_6Si_{16}$. 709-716A

Ductility, Alloying effects
Residual and Trace Element Effects on the High-Temperature Creep Strength of Austenitic Stainless Steels. 581-593A

Ductility, Anisotropy
Effect of Sulfides and Sulfide Morphology on Anisotropy of Tensile Ductility and Toughness of Hot Rolled C—Mn Steels. 471-484A

Ductility, Composition effects
A Rationalization of Tensile Ductility and Fracture in Alpha-Beta Ti—Mn Alloys. 2043-2053A

Ductility, Deformation effects
The Effect of Prior Heat Treatments on the Structure and Properties of Warm Rolled AISI 52100 Steel. 1427-1433A

Ductility, Impurity effects
Effects of Hydrogen on Notch Ductility and Fracture in Spheroidized AISI 1090 Steel. 259-269A
The Effects of Trace Impurities on the Ductility of a Cr—Mo—V Steel at Elevated Temperatures. 571-580A

Ductility, Microstructural effects
Effect of Sulfide Inclusion Morphology and Pearlite Banding on Anisotropy of Mechanical Properties in Normalized C—Mn Steels. 271-283A
Microstructure and Tensile Ductility in a Beta Heat Treated Titanium Alloy. 413-420A

Ductility, Stress effects
Failure Behavior of 304L Stainless Steel in Torsion. 2091-2099A

Dump leaching
A Partial Equilibrium Model to Characterize the Precipitation of Ferric Ion During the Leaching of Chalcopyrite With Ferrite Sulfate. 5-15B

Duralcote process
See Anodizing

Dust
See Flue dust

Dynamic tests
See Impact tests

Dynamics
See Fluid dynamics
Kinetics

Economics
Atlas Never Shrugged. 519B
Atlas Never Shrugged. 2199-2208A

Efficiency
See Current efficiency

Elastic constants
See Modulus of elasticity

Elastic modulus
See Modulus of elasticity

Electric assemblies
See Electric devices

Electric components
See Electric devices

Electric devices
Degradation of Mechanical Properties After 100 to 250°C Storage of 25 Micrometer Al—1% Si Microelectronic Interconnect Wire. 921-924A

Electric discharge machining
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A

Electric furnace process
See Electric furnace steel making

Electric furnace steel making
Prereduction and Melting of Domestic Titaniferous Materials. 55-62B

Electric furnaces
See Electric induction furnaces

Electric induction furnaces, Design
Hot Film Anemometry in Molten Woods Metal. 499-502B

Electric spark machining
See Electric discharge machining

Electric welding
See Electron beam welding
Gas tungsten arc welding
Submerged arc welding

Electrical conductivity
See Resistivity

Electrical phenomena
See Electrode potentials

Electrical properties
See Resistivity

Electrical resistivity
See Resistivity

Electrocoatings
See Anodic coatings

Electrode potentials
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B

Electrodes, Electrochemistry
Turbulent Natural Convection Along a Vertical Electrode. 633-643B

Electrodiffusion
Electromigration of Hydrogen and Deuterium in Tantalum: Isotope Effect. 2255-2260A

Electroerosion (machining)
See Electric discharge machining

Electrolysis
See Electrowinning
Hall Heroult process

Electrolytic cells, Design
The Hall—Héroult Cell: Some Design Alternatives Examined by a Mathematical Model. 63-70B

Electromagnetic fields
The Electromagnetic Force Field, Fluid Flow Field and Temperature Profiles in Levitated Metal Droplets. 401-410A

Electromagnetic isotope separation
See Isotope separation

Electromagnetic stirring
An Improved Mathematical Model for Melt Flow in Induction Furnaces and Comparison With Experimental Data. 306-308B
Hot Film Anemometry in Molten Woods Metal. 499-502B
On the Interfacial Kinetics of the Reaction of CO_2 With Liquid Iron. 504-506B

Electromotive force series
See Electrode potentials

Electromotive series
See Electrode potentials

Electron beam melting
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A

Electron beam vacuum melting
See Electron beam melting

Electron beam welding
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B

Electron microscopy
See Scanning electron microscopy
Transmission electron microscopy

Electron structure
See Electronic structure

Electronic assemblies
See Electric devices

Electronic components
See Electric devices

Electronic devices
See Electric devices

Electronic structure
Electromigration of Hydrogen and Deuterium in Tantalum: Isotope Effect. 2255-2260A

Electrooxidation
See Anodizing

Electroreduction
See Electrowinning

Electrorefining
See also Electroslag refining
Turbulent Natural Convection Along a Vertical Electrode. 633-643B

Electroslag process
See Electroslag refining

Electroslag refining
Slag Movement in ESR of Steel. 761-764B

Electrostaining
See Anodizing

Electrowinning
See also Hall Heroult process
The Fluidized Bed Electrowinning of Silver. 353-357B
Screening Design Test for Cobalt Cementation From Zinc Electrolyte. 495-497B

Electrowinning, Impurity effects
The Effects of Certain Impurities and Their Interactions on Zinc Electrowinning. 645-655B

Elevated temperature
See High temperature

Elongation, Temperature effects
Degradation of Mechanical Properties After 100 to 250°C Storage of 25 Micrometer Al—1% Si Microelectronic Interconnect Wire. 921-924A

Eloxal anodizing
See Anodizing

Embrittlement
See also Hydrogen embrittlement
Internal Chloridation of Dilute Ni—Cr Alloys. 509B

Embrittlement, Anisotropy
Anisotropic Embrittlement in High-Hardness ESR 4340 Steel Forgings. 1661-1669A

Embrittlement, Coating effects
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A

Embrittlement, Diffusion effects
High-Temperature Embrittlement of Nickel and Ni—Cr Alloys by Trace Elements. 595-610A
Segregation to Interphase Boundaries in Liquid-Phase Sintered Tungsten Alloys. 667-677A
A Study of the Chemical Composition of Grain Boundaries and Creep Cavity Surfaces in a Cu—Sb Alloy. 2447-2454A

Embrittlement, Impurity effects
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A

Emission
See Acoustic emission

Endurance limit
See Fatigue limit

Energy
See Activation energy
Free energy
Free energy of formation
Free energy of solution
Heat of formation

Energy of activation
See Activation energy

Energy of dissociation
See Free energy of formation

Energy of formation
See Free energy of formation

Energy of fracture
See Toughness

Energy of solution
See Free energy of solution

Energy storage
See Hydrogen storage

Environment
See also Corrosion environments
Atlas Never Shrugged. 519B
Atlas Never Shrugged. 2199-2208A

Equilibrium
See Chemical equilibrium

Equilibrium constants
See Chemical equilibrium

Equilibrium diagrams
See Phase diagrams

Europium, Extraction
Concentration of Europium (III) With Supported Liquid Membrane Containing a Xylene Solution of Di-2-Ethylhexyl Phosphoric Acid. 25-31B

Eutectics
See Directionally solidified eutectics

Eutectoid decomposition
Influence of Interfacial Structure Upon Carbide Precipitation at Austenite:Ferrite Boundaries in an Fe—C—Mo Alloy. 1159-1167A

Eutectoid reactions
See Eutectoid decomposition

Evaporation
See Boiling
Distillation

Exchangers (ion)
See Ion exchangers

Exchanging
See Cation exchanging

Exothermic reactions
See Aluminothermic reactions

Extraction
See Liquid liquid extraction
Solvent extraction

Extrusion
See Hot extrusion

Extrusions, Mechanical properties
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A

Fasteners, Heat treatment
The Sintering of Creep-Induced Cavities in a Low-Alloy Ferritic Steel (1Cr1Mo0.75V). 679-686A

Fatigue (materials)
See also Corrosion fatigue
Fatigue life
Fatigue limit
Fatigue strength
Low cycle fatigue
Fatigue Crack Initiation and Microcrack Propagation in X7091 Type Aluminum P/M Alloys. 1189-1197A
Wear Debris Due to Mode II Opening of Mode I Fatigue Cracks in an Aluminum Alloy. 1227-1230A
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A
Elastic—Plastic Analysis of Indentation Damages in Copper: Work-Hardening and Residual Stress.—I. 2415-2421A

Fatigue (materials), Heating effects
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A
The Effects of Heat Treatment on Fracture Toughness and Fatigue Crack Growth Rates in 440C and BG42 Steels. 1899-1906A

Fatigue (materials), Stress effects
Fatigue Crack Propagation in Intercritically Tempered Fe—9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A

Fatigue cracking
See Fatigue failure

Fatigue failure
Roughness-Induced Crack Closure: An Explanation for Microstructurally Sensitive Fatigue Crack Growth. 421-433A
S—N Curve Inversion of a Nickel-Base Superalloy at Elevated Temperature. 727-731A
Effects of Load Ratio and Temperature on the Near-Threshold Fatigue Crack Propagation Behavior in a CrMoV Steel. 1631-1640A
The Effect of Grain Size on Fatigue Growth of Short Cracks. 1697-1705A

Fatigue failure, Environmental effects
Fatigue of Stainless Steel in Hydrogen. 2085-2090A

Fatigue failure, Microstructural effects
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A
Fatigue of Annealed and Cold Worked Stable and Unstable Stainless Steels. 2077-2084A
The Effect of Microstructure on 650°C Fatigue Crack Growth in P/M Astroloy. 2301-2308A

Fatigue fracture
See Fatigue failure

Fatigue life
Fatigue Oxidation Interaction in a Superalloy—Application to Life Prediction in High-Temperature Low-Cycle Fatigue. 141-149A
Metallography of Fatigue Crack Initiation in an Overaged High-Strength Aluminum Alloy. 931-938A
Crack Propagation of Steels During Low-Cycle Thermal-Mechanical and Isothermal Fatigue at Elevated Temperatures. 1641-1648A
The Cyclic Response of Dilute Iron Alloys. 2507-2515A

Fatigue life, Alloying effects
Fatigue of Cu—1Cd. 1327-1332A
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A

Fatigue life, Environmental effects
Surface Deformation and Crack Initiation During Fatigue of Vacuum Melted Iron: Environmental Effects. 1421-1425A

Fatigue life, Heating effects
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A

Fatigue life, Microstructural effects
High-Cycle Fatigue of (Fe, Ni, Co)$_3$V Type Alloys. 1997-2003A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A

Fatigue life, Stress effects
The Importance of Surface Layer on Fatigue Behavior of a Ti—6Al—4V Alloy. 127-132A

Fatigue limit, Stress effects
The Importance of Surface Layer on Fatigue Behavior of a Ti—6Al—4V Alloy. 127-132A

Fatigue properties
See Fatigue (materials)

Fatigue strength, Microstructural effects
High-Cycle Fatigue of (Fe, Ni, Co)$_3$V Type Alloys. 1997-2003A
Influence of Thermomechanical Processing on Low-Cycle Fatigue of Prealloyed Ti—6Al—4V Powder Compacts. 2497-2505A

Ferric compounds
See Iron compounds

Ferrite, Crystal growth
Microstructural Origin of the Skeletal Ferrite Morphology of Austenitic Stainless Steel Welds. 1271-1281A

Ferritic stainless steels, Heat treatment
Sensitization of 12 Wt.-% Chromium, Titanium-Stabilized Ferritic Stainless Steel. 1721-1728A

Ferritic stainless steels, Phases (state of matter)
Intermetallic Phase Formation in 25Cr—3Mo—4Ni Ferritic Stainless Steel. 791-800A

Ferritic stainless steels, Structural hardening
Precipitation Reactions During the Heat Treatment of Ferritic Steels. 1047-1055A

Ferroalloys
See Ferrovanadium

Ferromagnetic materials
See Magnetite

Ferrous alloys
See also Alloy steels
Steels

Ferrous alloys, Casting
Pool Boiling Cooling for Melt Spinning Quench Wheels. 71-76B

Ferrous alloys, Chemical analysis
STEM-EDS X-Ray Microanalysis of Small Precipitates in Iron-Base Thin Foils. 1943-1949A

Ferrous alloys, Corrosion
The Effects of Cerium Additions on the High-Temperature Corrosion Behavior of Fe—30Cr—5Al Alloy in 80% Na_2SO_4—20% NaCl Molten Salt. 2131-2142A

Ferrous alloys, Crystal growth
Characteristics of Lath Martensite. III.—Some Theoretical Considerations. 835-844A

Ferrous alloys, Crystal lattices
X-Ray Diffraction Study on the Structure of Rapidly Solidified Fe—Al—C and Fe(Mn,Ni)—Al—C Alloys. 973-975A
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A
DO_3-Domain Growth Kinetics in the Fe—20 At.% Al—5 At.% Si Alloy. 2435-2437A

Ferrous alloys, Diffusion
Identification of Zero-Flux Planes and Flux Reversals in Several Studies of Ternary Diffusion. 857-864A
Low-Temperature Diffusivity Measurements in the FeNi System Using STEM Techniques. 2437-2439A

Ferrous alloys, Magnetic properties
Correlation Between Microstructure and Coercivity of Amorphous $(Fe_{0.82}B_{0.18})_{0.90}Tb_{0.05}La_{0.05}$ Alloy Ribbons. 953-961A

Ferrous alloys, Mechanical properties
Determination of Fatigue Crack Growth in Incoloy Alloy 800 in Molten Nitrate Salt. 314-317A
Grain Boundary Sliding and Stress Concentration During Creep. 531-545A
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A
Strength of Initially Virgin Martensites at—196°C After Aging and Tempering. 1007-1012A
The Tensile Properties of an Fe—4%Mo—0.2%C Martensite Tempered Under Applied Stress. 1067-1077A
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al Alloy at 973 to 1073K. 1207-1211A
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A
The Effect of Hydrogen Gas on the Plasticity/Cleavage Balance in Fe—3.5Si. 1505-1510A
Oxide Scale Induced Cleavage Fracture in an ODS Fe—Cr—Al Alloy. 1516-1518A
Microfracture Model for Hydrogen Embrittlement of Austenitic Steels. 1528-1531A
Behavior of Model Fe—Ni—Cr Alloys During Stress-Rupture in Sulfidizing and Oxidizing Environments. 2063-2075A

Ferrous alloys, Microstructure
Characteristics of Lath Martensite. I.—Crystallographic and Substructural Features. 809-822A
Characteristics of Lath Martensite. II.—The Martensite/Austenite Interface. 823-834A
Chi-Carbide in Tempered High-Carbon Martensite. 1033-1045A
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A
The Substructure of $(252)_t$ Martensite Formed in an Fe—8Cr—1C Alloy. 2455-2468A

Ferrous alloys, Oxidation
The Sulfidation/Oxidation of Armco Iron-Based Superalloys Between 1023 and 1373K. 657-665B

Ferrous alloys, Phase transformations
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A
Influence of Interfacial Structure Upon Carbide Precipitation at Austenite:Ferrite Boundaries in an Fe—C—Mo Alloy. 1159-1167A
Development and Application of Growth Models for Grain Boundary Allotriomorphs of a Stoichiometric Compound in Ternary Systems. 1261-1269A
Some Crystallographic Characteristics of the $(252)_t$ Martensite Transformation in Iron Alloys. 2469-2477A

Ferrous alloys, Powder technology
Further Comments on Grain Boundary Wetting in Liquid Phase Sintered Fe—Cu Alloys. 977-978A

Ferrous alloys, Solubility
Effect of Silicon on the Solubility Product of Vanadium Carbide in Austenite and on Other Phase Equilibria in Fe—V—Si—C Alloys at 993°C. 307-308A
The Solubility of the Liquid Oxysulfide Phase in Liquid Fe—O—S Alloys. 679-683B

Ferrous alloys, Structural hardening
An Atom Probe Study of the Aging of Iron—Nickel—Carbon Martensite. 1021-1024A
Early Stages of Aging and Tempering of Ferrous Martensites. 1057-1065A
The Effect of Fine Grain Size on the M_s Temperature in Fe—27Ni—0.025C Alloys. 1929-1931A

Ferrous alloys, Welding
Weld Microstructure of (Ni, Fe)$_3$(V,Ti) Long-Range-Ordered Alloy. 1785-1791A

Ferrous compounds
See Iron compounds

Ferrous metals
See Ferrous alloys

Ferrovanadium, Melting
Ferrovanadium From a Secondary Source of Vanadium. 133-135B

Field strength
The Electromagnetic Force Field, Fluid Flow Field and Temperature Profiles in Levitated Metal Droplets. 401-410A

Fields (physics)
See Electromagnetic fields

Finite element method
Evaluating Hardening Laws at Large Tensile Strains in Sheet Specimens. 2269-2275A
Operant Strain-Rate Sensitivity During Tensile Necking. 2395-2406A

Finsider process
See Direct reduction

Fission reactors
See Nuclear reactors

Flame reduction process
See Direct reduction

Flames
Heat Transfer From Flames in a Rotary Kiln. 411-424B

Flexural vibration
See Fatigue (materials)

Flow
See Fluid flow
Plastic flow
Turbulent flow

Flow stress
See Yield strength

Flue dust
Vaporization Studies of Calcium Arsenate Under Neutral Conditions and in Contact With Copper Pyrometallurgical Slags. 171-174B

Fluid dynamics
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B

Fluid flow
See also Turbulent flow
The Electromagnetic Force Field, Fluid Flow Field and Temperature Profiles in Levitated Metal Droplets. 401-410A
Fluid Flow Into a Dendritic Array Under Forced Convection. 733-741B
Slag Movement in ESR of Steel. 761-764B

Fluid form deep drawing
See Deep drawing

Fluid mechanics
See Fluid dynamics

Fluidized beds
The Fluidized Bed Electrowinning of Silver. 353-357B

Fluids
See Gases

Fluorine, Reactions (chemical)
Kinetics of the $F, F_2/Gd(s,v)$ Reactions. 53-60A

Foams, Mechanical properties
The Mechanical Properties of Cellular Solids. 1755-1769A

Force
See also Coercive force
Measurement of the Force Exerted by a Welding Arc. 1223-1224A

Forging
See also Hot forging
Processing—Microstructure Relationships for Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 2363-2374A

Forgings, Mechanical properties
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A
Anisotropic Embrittlement in High-Hardness ESR 4340 Steel Forgings. 1661-1669A
Deformation Processing of an Aluminum Alloy Containing Particles: Studies on Al—5% Si Alloy 4043. 1671-1679A

Formability
Development of Forming Limits for Superplastic Formed Fine-Grain 7475 Al. 1593-1598A
Failure Behavior of 304L Stainless Steel in Torsion. 2091-2099A
Evaluating Hardening Laws at Large Tensile Strains in Sheet Specimens. 2269-2275A

Formability, Microstructural effects
Deformation and Fracture of Strongly Textured Titanium Alloy Sheets in Uniaxial Tension. 1333-1342A
Stretch Forming and Fracture of Strongly Textured Ti Alloy Sheets. 1343-1348A

Forming
See Ausforming
Controlled rolling
Deep drawing
Forging
Hot extrusion
Hot isostatic pressing
Hot rolling
Isostatic pressing
Stamping
Stretch forming
Superplastic forming
Thermomechanical treatment
Upsetting
Wire drawing

Fossil fuels
See Coal

Fractional distillation
See Distillation

Fractionation
See Distillation

Fracture mechanics
See also Crack opening displacement
J integral
Effect of Fracture Surface Roughness on Growth of Short Fatigue Cracks. 153-155A
Retained Austenite and Tempered Martensite Embrittlement in Medium-Carbon Steels. 1121-1133A
Wear Debris Due to Mode II Opening of Mode I Fatigue Cracks in an Aluminum Alloy. 1227-1230A
Statistical Aspects of Cleavage Fracture in Steel. 1349-1355A
Effect of Strain Wave Shape on Low-Cycle Fatigue Crack Propagation of SUS304 Stainless Steel at Elevated Temperatures. 1649-1659A
The Nature of Quasicleavage Fracture in Tempered 5.5Ni Steel After Hydrogen Charging. 1883-1888A
Fractographic Observations of Cleavage Initiation in the Ductile-Brittle Transition Region of a Reactor-Pressure-Vessel Steel. 1934-1937A
A Local Criterion for Cleavage Fracture of a Nuclear Pressure Vessel Steel. 2277-2287A
Laboratory Extrusion of Nb_3Sn. 2295-2299A
An Investigation on the Creep and Fracture Behavior of Cast Nickel-Base Superalloy IN738LC. 2329-2335A
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A

Fracture strength
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A

Fracture strength, Composition effects
A Rationalization of Tensile Ductility and Fracture in Alpha-Beta Ti—Mn Alloys. 2043-2053A

Fracture toughness
Analyzing Statistical Variability of Fracture Properties. 687-693A
Fatigue Crack Propagation in Intercritically Tempered Fe—9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A
Comparison of the Plane Strain Crack Arrest Fracture Toughness of 4340, 4140 and 1340 Steel. 1459-1465A
The Mechanical Properties of Cellular Solids. 1755-1769A
A Local Criterion for Cleavage Fracture of a Nuclear Pressure Vessel Steel. 2277-2287A

Fracture toughness, Alloying effects
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A

Fracture toughness, Cryogenic effects
Fracture Toughness of CF8 Castings at 4K. 1179-1188A

Fracture toughness, Deformation effects
Effect of Prestrain on the Mechanical Properties of Eutectoid Steel. 1379-1388A

Fracture toughness, Heating effects
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A
Heat Treatment for Improvement in Lower-Temperature Mechanical Properties of 0.40% C—Cr—Mo Ultrahigh-Strength Steel. 2387-2393A

Fracture toughness, Impurity effects
Effects of Hydrogen on Notch Ductility and Fracture in Spheroidized AISI 1090 Steel. 259-269A
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A

Fracture toughness, Microstructural effects
The Influence of the $M_{23}(C,N)_6$ Compound on the Mechanical Properties of Type 422 Stainless Steel. 1395-1408A
The Effects of Heat Treatment on Fracture Toughness and Fatigue Crack Growth Rates in 440C and BG42 Steels. 1899-1906A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A
Effects of Microstructure on Fracture Toughness of a High-Strength Low-Alloy Steel. 2055-2061A

Fracture toughness, Temperature effects
The Effect of Temperature, Specimen Size and Geometry on the Fracture Toughness of a 3% NiCrMoV Low-Pressure Turbine Disk Steel. 751-759A

Fracturing
See also Brittle fracture
Ductile fracture
Intergranular fracture
Cleavage Delamination in Impact Tested Warm Rolled Steel. 2487-2496A

Fracturing, Microstructural effects
Microstructure and Tensile Ductility in a Beta Heat Treated Titanium Alloy. 413-420A
Microstructure, Tensile Deformation and Fracture in Aged Ti—10V—2Fe—3Al. 2101-2115A
Texture-Induced Cleavage Delamination of Warm Rolled Low-Carbon Steel. 2563-2566A

Frames
See Airframes

Free energy
See also Activation energy
Free energy of formation
Free energy of solution
A Solid-State E.M.F. Study of the Pyrrhotite—Magnetite Equilibrium in the Temperature Interval 850 to 1275K. 459-464B

Free energy of activation
See Activation energy

Free energy of dissociation
See Free energy of formation

Free energy of formation
The Correlation of the Thermodynamic Properties of Wustite by a Gaussian-Based Formalism. 771-775A
High-Temperature Thermodynamic Properties of the Tungsten Carbide WC Determined Using a Galvanic Cell Technique. 1915-1919A

Free energy of solution
Elastic Interaction of Two Precipitates Subjected to an Applied Stress Field. 2219-2227A

Fuels
See Coal
Kerosene

Fume control
The Carbothermal Reduction of Nickel Sulfide in the Presence of Lime. 605-615B

Furnaces
See Blast furnaces
Electric induction furnaces
Rotary furnaces

Fused salt electrolysis
See Hall Heroult process

Fused salts, Environment
Determination of Fatigue Crack Growth in Incoloy Alloy 800 in Molten Nitrate Salt. 314-317A

Fuselages
See Airframes

Fusion welding
See Electron beam welding
Gas tungsten arc welding
Submerged arc welding

Gadolinium, Reactions (chemical)
Kinetics of the F, F_2/Gd(s,v) Reactions. 53-60A

Galvanic cells
See Electrolytic cells

Galvanized steels, Mechanical properties
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A

Galvanizing
See Hot dip galvanizing

Galvannealing
See Annealing

Gas
See Gases

Gas cooled reactors, Corrosion
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B

Gas permeability
See Permeability

Gas tungsten arc welding
Precipitation in CF-8M Duplex Stainless Steel Welds. 37-44A
Effect of Solidification Conditions on the Solidification Mode in Austenitic Stainless Steels. 191-197A
Measurement of the Force Exerted by a Welding Arc. 1223-1224A
Microstructural Origin of the Skeletal Ferrite Morphology of Austenitic Stainless Steel Welds. 1271-1281A
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A
Weld Microstructure of (Ni, Fe)$_3$(V,Ti) Long-Range-Ordered Alloy. 1785-1791A
Three-Dimensional Heat Flow and Solidification During the Autogenous GTA Welding of Aluminum Plates. 2245-2253A

Gas turbines
Solid-State SiC/Ni Alloy Reaction. 355-364A

Gas turbines, Materials selection
Chemistry and Distribution of Phases Produced by Solid State SiC/NiCrAl Reaction. 781-790A

Gaseous diffusion process
See Isotope separation

Gases, Environment
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A

Gases, Refining
Reaction Rates for Sulfur Fixation With Iron at 1100 to 1275K. 291-300B

Gasification
See Coal gasification

Germanium, Alloying elements
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A

Germanium, Impurities
The Effects of Certain Impurities and Their Interactions on Zinc Electrowinning. 645-655B

Gibbs free energy
See Free energy

Glass
See Metallic glasses

GP zone
See Guinier Preston zone

Grain boundaries
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A
Further Comments on Grain Boundary Wetting in Liquid Phase Sintered Fe—Cu Alloys. 977-978A
Vapor Transport and DIGM in the Ni—Fe System. 2560-2563A

Grain boundaries, Chemical analysis
A Study of the Chemical Composition of Grain Boundaries and Creep Cavity Surfaces in a Cu—Sb Alloy. 2447-2454A

Grain boundary sliding
Alpha/Beta Interface Sliding in Ti—Mn Alloys. 500-503A
Grain Boundary Sliding and Stress Concentration During Creep. 531-545A
Observations of Grain Boundary Sliding During Superplastic Deformation. 1451-1458A
Cavity Growth on a Sliding Grain Boundary. 2289-2293A

Grain growth
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A
Discontinuous Gamma Prime Coarsening in a Ni—Al—Mo Base Superalloy. 1283-1292A

Grain growth, Alloying effects
Austenite Grain Coarsening in Microalloyed Steels. 1989-1995A

Grain growth, Composition effects
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Grain orientation, Heating effects
Orientation Distribution Function Analysis of the Recrystallization Texture in a Boron-Treated Deep-Drawing Steel. 11-15A

Grain orientation, Stress effects
X-Ray Diffraction Study of Subgrain Misorientation During High-Temperature Creep of Tin Single Crystals. 117-126A

Grain size
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A
Correlation Between Microstructure and Coercivity of Amorphous $(Fe_{0.82}B_{0.18})_{0.90}Tb_{0.05}La_{0.05}$ Alloy Ribbons. 953-961A
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A
Fatigue Crack Initiation and Microcrack Propagation in X7091 Type Aluminum P/M Alloys. 1189-1197A
Influence of Microstructure on the Alpha-Gamma Transformation of Iron. 1511-1512A
The Effect of Grain Size on Fatigue Growth of Short Cracks. 1697-1705A
The Effect of Fine Grain Size on the M_s Temperature in Fe—27Ni—0.025C Alloys. 1929-1931A
The Effect of Microstructure on 650°C Fatigue Crack Growth in P/M Astroloy. 2301-2308A
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A
Hydrogen-Induced Cracking in a Low-Alloy Steel. 2347-2356A
Grain Size—Acoustic Emission Relationships in Hydrogen-Induced Delayed Cracking. 2357-2362A

Grain size, Deformation effects
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A
Influence of Nonsteady State Behavior on Superplastic Deformation of a 25.7Cr—6.6Ni Stainless Steel. 1875-1882A

Grain size, Heating effects
Effects of Microstructure on Fracture Toughness of a High-Strength Low-Alloy Steel. 2055-2061A

Grain size, Stress effects
Effect of Stress Reductions on the Stress Exponent and Subgrain Size in an Al—Zn Alloy. 2309-2318A

Grain structure
The Microstructure of Rapidly Solidified Beta-Phase Cu—Zn—Al Alloys. 2229-2234A

Gravitation
Optical Observations of Unidirectional Solidification in Microgravity. 2163-2167A

Gravity
See Gravitation

Growth
See Grain growth
Growth rate

Growth rate
Effect of Fracture Surface Roughness on Growth of Short Fatigue Cracks. 153-155A
Cavity Growth on a Sliding Grain Boundary. 2289-2293A
DO_3-Domain Growth Kinetics in the Fe—20 At.% Al—5 At.% Si Alloy. 2435-2437A

Growth rate, Heating effects
The Kinetics of Sigma-Phase Precipitation in AISI 310 and AISI 316 Steels. 635-641A

Growth rate, Size effects
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A

Guinier Preston zone
A TEM Study of Microstructural Changes During Retrogression and Reaging in 7075 Aluminum. 1843-1850A

Hafnium, Alloying additive
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A

Halides
See Chlorides
Sodium chloride

Hall Heroult process
The Hall—Héroult Cell: Some Design Alternatives Examined by a Mathematical Model. 63-70B

Halogenation
See Chlorination

Halogens
See Chlorine
Fluorine

Hardenability, Impurity effects
Effect of Recycling on Residuals, Processing and Properties of Carbon and Low-Alloy Steels. 343-353A

Hardening
See also Aging (artificial)
Carburizing
Dispersion hardening
Laser beam hardening
Nitriding
Precipitation hardening
Shot peening
Strain aging
Strain hardening
Structural hardening
Surface hardening
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al Alloy at 973 to 1073K. 1207-1211A

Hardness
See also Microhardness
Microstructure and Mechanical Properties of Rapidly Quenched $L1_2$ Alloys in Ni—Al—X Systems. 1367-1377A
Deformation Processing of an Aluminum Alloy Containing Particles: Studies on Al—5% Si Alloy 4043. 1671-1679A
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A

Hardness, Cooling effects
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A

Hardness, High temperature effects
High-Temperature Hardness of Tungsten Carbide. 1625-1629A

Hardness tests
On the Definition of Microhardness. 947-952A
Determination of Lüders Strains and Flow Properties in Steels From Hardness/Microhardness Tests. 1607-1613A

Hazelett process
See Continuous casting

Heat affected zone, Microstructure
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B

Heat flow
See Heat transmission

Heat flux
See Heat transmission

Heat measurement
Localized Heat Generation During Fracture of Cyclically Loaded Steel. 1409-1419A

Heat of decomposition
See Heat of formation

Heat of dissociation
See Heat of formation

Heat of formation
The Thermodynamic Activity of ZnO in Silicate Melts. 725-731B

Heat resistant alloys
See Superalloys

Heat transfer
Heat Transfer From Flames in a Rotary Kiln. 411-424B
A Mathematical Model of a Drum and Ring Horizontal Strip Casting Process. 487-493B
Turbulent Natural Convection Along a Vertical Electrode. 633-643B

Heat transmission
Pool Boiling Cooling for Melt Spinning Quench Wheels. 71-76B
Heat Transfer From Flames in a Rotary Kiln. 411-424B
A Fundamental Study of Laser Transformation Hardening. 643-653A
Heat Flow Model for Surface Melting and Solidification of an Alloy. 1169-1177A
Heat Flow During the Laser Transformation Hardening of Cylindrical Bodies. 1859-1867A

Heat transmission, Welding effects
Three-Dimensional Heat Flow and Solidification During the Autogenous GTA Welding of Aluminum Plates. 2245-2253A

Heat treatment
See also Aging (artificial)
Annealing
Austenitizing
Carburizing
Homogenizing
Isothermal annealing
Nitriding
Overaging
Precipitation hardening
Tempering
Microstructural Sources of Toughness in QLT-Treated 5.5Ni Cryogenic Steel. 93-103A
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A
Microstructure and Tensile Ductility in a Beta Heat Treated Titanium Alloy. 413-420A
Heat Treatment for Improvement in Lower-Temperature Mechanical Properties of 0.40% C—Cr—Mo Ultrahigh-Strength Steel. 2387-2393A

Heating
See Laser beam heating

Heats (energies)
See Heat of formation

Heavy metals
See Antimony
Bismuth
Cadmium
Lead (metal)
Tin

Heliarc welding
See Gas tungsten arc welding

Helium
Ion-Beam Profiling of ^3He in Tritium-Exposed Type 304L and Type 21-6-9 Stainless Steels. 2261-2267A

Helmholtz free energy
See Free energy

Hematite, Reduction (chemical)
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B
The Conditions for the Formation of Lath and Porous Magnetite on Reduction of Hematite in H_2/H_2O Gas Mixtures. 513-514B
Kinetics of Reduction of Hematite With Hydrogen Gas at Modest Temperatures. 711-723B
Rate Processes and Structural Changes in Gaseous Reduction of Hematite Particles to Magnetite. 743-752B

High alloy steels
See Austenitic stainless steels
Ferritic stainless steels
Maraging steels
Martensitic stainless steels
Stainless steels

High speed tool steels, Mechanical properties
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A

High strength low alloy steels, Crystal growth
Austenite Grain Coarsening in Microalloyed Steels. 1989-1995A

High strength low alloy steels, Mechanical properties
Analyzing Statistical Variability of Fracture Properties. 687-693A
Effects of Microstructure on Fracture Toughness of a High-Strength Low-Alloy Steel. 2055-2061A
The Cyclic Response of Dilute Iron Alloys. 2507-2515A
On the Determination of Hill's Plastic Strain Ratio. 2566-2567A

High strength low alloy steels, Rolling
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

High strength steels, Mechanical properties
Crack Propagation of High-Strength Steels in a Gaseous Hydrogen Atmosphere. 717-726A
Fractographic Observations of Cleavage Initiation in the Ductile-Brittle Transition Region of a Reactor-Pressure-Vessel Steel. 1934-1937A
A Local Criterion for Cleavage Fracture of a Nuclear Pressure Vessel Steel. 2277-2287A
Heat Treatment for Improvement in Lower-Temperature Mechanical Properties of 0.40% C—Cr—Mo Ultrahigh-Strength Steel. 2387-2393A

High strength steels, Structural hardening
Role of Retained Austenite on the Deformation of an Fe—0.07C—1.8Mn—1.4Si Dual-Phase Steel. 1497-1504A

High temperature
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A

High temperature tests
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A

HIP
See Hot isostatic pressing

Homogenizing
Anisotropic Embrittlement in High-Hardness ESR 4340 Steel Forgings. 1661-1669A

Honeycomb construction
The Mechanical Properties of Cellular Solids. 1755-1769A

Hot brittleness
See Brittleness

Hot cracking (welds)
See Weld defects

Hot dip coating
See Hot dip galvanizing

Hot dip galvanizing
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A

Hot ductility
See Ductility

Hot extrusion
Flow Localization Accompanying the Intergranular Fracture of Ni_3Al. 1523-1524A

Hot forging
The Occurrence of Shear Bands in Nonisothermal, Hot Forging of Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 105-115A
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A
Strain Aging of Ti-6242 at Hot Working Temperatures. 1512-1516A

Hot gas corrosion
Thermochemistry of $Na_2O—WO_3$ System at 1065 to 1239K. 1713-1720A

Hot hardness
See Hardness

Hot isostatic pressing
Microstructures and Mechanical Properties of Hot Isostatically Pressed Powder Metallurgy Alloy APK-1. 733-742A
Fatigue Crack Growth Rate of Ti—6Al—4V Prealloyed Powder Compacts. 1524-1528A
Laboratory Extrusion of Nb_3Sn. 2295-2299A

Hot pressing
See Hot isostatic pressing

Hot rolling
Effect of Processing Variables on Resultant Microstructure and Properties of C—Mn—Si Steel. 308-312A
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

Hot roughing
See Hot rolling

Hot shortness
See Brittleness

Hot strength
See Tensile strength

Hot stretch forming
See Stretch forming

Hot tensile strength
See Tensile strength

Hot torsion tests
See Torsion tests

Hot workability, Alloying effects
The Effect of Cerium on High-Temperature Tensile and Creep Behavior of a Superalloy. 611-621A

Hot working
See Austforming
Hot extrusion
Hot forging
Hot rolling

Hydrogen
See also Deuterium
Tritium

Hydrogen, Diffusion
Effects of X-Ray Irradiation on Hydrogen-Induced Phase Transformations in Stainless Steel. 151-152A
Discussion of "Permeation Measurements of Hydrogen Trapping in 1045 Steel" and Reply. 158-158A
Hydrogen Permeation and Diffusion in Niobium. 203-210A
Kinetic Enrichment of Hydrogen at Interfaces and Voids by Dislocation Sweep-In of Hydrogen. 385-393A
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B
Thermotransport of Hydrogen and Deuterium in Vanadium—Niobium, Vanadium—Titanium and Vanadium—Chromium Alloys. 871-874A
Calculations of the Binding of Hydrogen to Fixed Interstitial Impurities in Nickel. 1257-1260A
Effect of Cold Working on the Hydrogen Trapping Phenomena in Pure Iron. 1299-1305A
Hydrogen-Induced Lattice Expansion in Nickel. 1545-1548A
Diffusivity of Hydrogen and Deuterium at Low Concentration in $Fe_{0.5}Ti_{0.5}$. 1573-1577A
The Diffusivity of Hydrogen in Niobium-Stabilized Stainless Steel. 1869-1874A
Hydrogen Traps, Repellers and Obstacles in Steel. Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A

Hydrogen, Reactions (chemical)
An Experimental Investigation of the Internal Methane Pressure in Hydrogen Attack. 963-971A

Hydrogen, Recovering
Thermochemical Decomposition of Hydrogen Sulfide With Nickel Sulfide. 347-352B

Hydrogen, Solubility
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A

Hydrogen, Sorption
Observation of Local Hydrogen on Nickel Surfaces. 2440-2442A

Hydrogen compounds
See Hydrogen sulfide

Hydrogen embrittlement
Discussion of "Permeation Measurements of Hydrogen Trapping in 1045 Steel" and Reply. 156-158A
Effects of Hydrogen on Notch Ductility and Fracture in Spheroidized AISI 1090 Steel. 259-269A
Kinetic Enrichment of Hydrogen at Interfaces and Voids by Dislocation Sweep-In of Hydrogen. 385-393A
Effects of Hydrogen on Near-Threshold Crack Propagation in Niobium. 701-707A
Crack Propagation of High-Strength Steels in a Gaseous Hydrogen Atmosphere. 717-726A
The Effect of Loading Mode on the Stress Corrosion Cracking of Aluminum Alloy 5083. 925-930A
An Experimental Investigation of the Internal Methane Pressure in Hydrogen Attack. 963-971A
Effect of Cold Working on the Hydrogen Trapping Phenomena in Pure Iron. 1299-1305A
The Effect of Hydrogen Gas on the Plasticity/Cleavage Balance in Fe—3.5Si. 1505-1510A
Microfracture Model for Hydrogen Embrittlement of Austenitic Steels. 1528-1531A
Hydrogen Pressure Dependence of the Fracture Mode Transition in Nickel. 1729-1736A
The Nature of Quasicleavage Fracture in Tempered 5.5Ni Steel After Hydrogen Charging. 1883-1888A
Fatigue of Stainless Steel in Hydrogen. 2085-2090A
Direct Measurement of the Gas Content of Blisters Formed by Hydrogen Attack During Steam Corrosion in a Low-Alloy Steel. 2187-2189A
Hydrogen Traps, Repellers and Obstacles in Steel. Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A
Grain Size—Acoustic Emission Relationships in Hydrogen-Induced Delayed Cracking. 2357-2362A
The Effect of Hydrogen on the Multiaxial Stress—Strain Behavior of Titanium Tubing. 2527-2533A

Hydrogen embrittlement, Alloying effects
Hydrogen-Induced Cracking in 4340-Type Steel: Effects of Composition, Yield Strength and Hydrogen Pressure. 881-888A
On the Corrosion Fatigue Behavior of a Modified SAE 4135 Type Steel in a H_2S Environment. 1737-1742A

Hydrogen embrittlement, Deformation effects
The Enhancement of Hydrogen Attack in Steel by Prior Deformation. 695-699A

Hydrogen embrittlement, Heating effects
The Effect of Copper Content and Microstructure on the Hydrogen Embrittlement of Al—6Zn—2Mg Alloys. 2517-2526A

Hydrogen embrittlement, Impurity effects
Influence of Sulfur, Phosphorus and Antimony Segregation on the Intergranular Hydrogen Embrittlement of Nickel. 223-232A
Solute Segregation and Hydrogen-Induced Intergranular Fracture in an Alloy Steel. 903-911A

Hydrogen embrittlement, Microstructural effects
Effect of Weld Composition and Microstructure on Hydrogen-Assisted Fracture of Austenitic Stainless Steels. 75-84A

Hydrogen potential
See Electrode potentials

Hydrogen reduction
A Study of the Mechanism of Reduction With Hydrogen of Pure Wüstite Single Crystals. 125-132B
An Equilibrium Study of the Hydrogen Reduction of Copper Sulfates. 136-139B
Kinetics of Reduction of Hematite With Hydrogen Gas at Modest Temperatures. 711-723B
The Decomposition of Wustite Under Mixed Chemical Reactions/Mass Transport Limitations. 753-759B

Hydrogen storage
Diffusivity of Hydrogen and Deuterium at Low Concentration in $Fe_{0.5}Ti_{0.5}$. 1573-1577A

Hydrogen sulfide, Environment
Corrosion of 310 Stainless Steel in $H_2—H_2O—H_2S$ Gas Mixtures: Studies at Constant Temperature and Fixed Oxygen Potential. 295-305A
On the Corrosion Fatigue Behavior of a Modified SAE 4135 Type Steel in a H_2S Environment. 1737-1742A

Hydrogen sulfide, Reactions (chemical)
Thermochemical Decomposition of Hydrogen Sulfide With Nickel Sulfide. 347-352B

Hydrogenation
Observation of Local Hydrogen on Nickel Surfaces. 2440-2442A

Hydrometallurgy
See Jarosite process

Hydrostatic pressure
Control of Superplastic Cavitation by Hydrostatic Pressure. 1583-1591A
Laboratory Extrusion of Nb_3Sn. 2295-2299A

Hydrostatic tests
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A

Hydroxides
See Sodium hydroxide

Illuminating oil
See Kerosene

Ilmenite, Melting
Prereduction and Melting of Domestic Titaniferous Materials. 55-62B

Image analysis
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Immersion coating
See Hot dip galvanizing

Impact strength, Anisotropy
Effect of Sulfides and Sulfide Morphology on Anisotropy of Tensile Ductility and Toughness of Hot Rolled C—Mn Steels. 471-484A

Impact strength, Deformation effects
Effect of Prestrain on the Mechanical Properties of Eutectoid Steel. 1379-1388A

Impact strength, Heating effects
Tempered Martensite Embrittlement in Fe—Mo—C and Fe—W—C Steel. 1389-1394A

Impact strength, Microstructural effects
The Influence of the $M_{23}(C,N)_6$ Compound on the Mechanical Properties of Type 422 Stainless Steel. 1395-1408A

Impact tests
The Evaluation of Tempered Martensite Embrittlement in 4130 Steel by Instrumented Charpy V-Notch Testing. 1109-1119A

Impact toughness
See Impact strength

Impermeability
See Permeability

Impurities
See also Interstitial impurities
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A

Impurities, Diffusion
Segregation to Interphase Boundaries in Liquid-Phase Sintered Tungsten Alloys. 667-677A

In situ leaching
A Kinetic Model of UO_2 Dissolution in Acid, H_2O_2 Solutions That Includes Uranium Peroxide Hydrate Precipitation. 325-334B

Inclusions
See Nonmetallic inclusions

Indentation
On the Definition of Microhardness. 947-952A
Elastic—Plastic Analysis of Indentation Damages in Copper: Work-Hardening and Residual Stress.—I. 2415-2421A

Induction furnaces
See Electric induction furnaces

Induction melting
See also Vacuum induction melting
An Improved Mathematical Model for Melt Flow in Induction Furnaces and Comparison With Experimental Data. 306-308B

Inductovac process
See Induction melting

Inert gas welding
See Gas tungsten arc welding

Ingot casting
Slag Movement in ESR of Steel. 761-764B

Intensity
See Stress intensity

Interface reactions
Chemistry and Distribution of Phases Produced by Solid State SiC/NiCrAl Reaction. 781-790A
Phase Equilibria and Kinetics in the Solid-State Reaction Between Silicon and NiCrAl. 1549-1560A
A Mass Spectroscopy Study of Palladium Silicide Formation. 2557-2558A

Interface reactions, Heating effects
Reactions and Diffusion Between an Aluminum Film and a Titanium Substrate. 61-66A

Interfaces
Interfacial Effects in Gaseous Reduction of $PbO.SiO_2$ Melts. 693-700B
Kinetics of Reduction of Hematite With Hydrogen Gas at Modest Temperatures. 711-723B
Influence of Interfacial Structure Upon Carbide Precipitation at Austenite:Ferrite Boundaries in an Fe—C—Mo Alloy. 1159-1167A

Interfaces, Crystal lattices
Characteristics of Lath Martensite. II.—The Martensite/Austenite Interface. 823-834A

Interfaces, Phases (state of matter)
Interface Equilibrium in Alpha/Beta Cu—Al Diffusion Couples. 1224-1227A

Intergranular corrosion
Sensitization of 12 Wt.-% Chromium, Titanium-Stabilized Ferritic Stainless Steel. 1721-1728A

Intergranular fracture
Grain Boundary Sliding and Stress Concentration During Creep. 531-545A
The Effects of Trace Impurities on the Ductility of a Cr—Mo—V Steel at Elevated Temperatures. 571-580A
Flow Localization Accompanying the Intergranular Fracture of Ni_3Al. 1523-1524A
Hydrogen Pressure Dependence of the Fracture Mode Transition in Nickel. 1729-1736A

Intergranular fracture, Alloying effects
Hydrogen-Induced Cracking in 4340-Type Steel: Effects of Composition, Yield Strength and Hydrogen Pressure. 881-888A

Intergranular fracture, Diffusion effects
Crack and Cavity Nucleation at Interfaces During Creep. 547-561A
The Effects of Segregation on the Kinetics of Intergranular Cavity Growth Under Creep Conditions. 563-570A
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A

Intergranular fracture, Heating effects
The Tensile Properties of an Fe—4%Mo—0.2%C Martensite Tempered Under Applied Stress. 1067-1077A

Intergranular fracture, Impurity effects
Solute Segregation and Hydrogen-Induced Intergranular Fracture in an Alloy Steel. 903-911A

Intergranular fracture, Microstructural effects
High-Cycle Fatigue of (Fe, Ni, Co)$_3$V Type Alloys. 1997-2003A

Intergranular precipitation
An AEM Investigation of the Formation of Precipitate-Free Zones in an Al—16 Wt.-% Ag Alloy—Determination of Equilibrium and Metastable Solvus Lines. 1825-1831A

Intermetallic compounds
See Intermetallics

Intermetallics, Mechanical properties
Microstructure and Mechanical Properties of Rapidly Quenched $L1_2$ Alloys in Ni—Al—X Systems. 1367-1377A

Internal friction
See Snoek effect

Internal stress
See Residual stress

Interstitial defects
See Interstitial impurities

Interstitial impurities
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A
Calculations of the Binding of Hydrogen to Fixed Interstitial Impurities in Nickel. 1257-1260A

Interstitial solutions, Heating effects
Crystallographic Study of the Tempering of Martensitic Carbon Steel by Electron Microscopy and Diffraction. 1025-1031A

Ion exchangers
Chemical Equilibrium Studies on the Copper—Sulfuric Acid—Kelex 100—Xylene System. 153-158B

Ion exchanging
See Cation exchanging

Iron
See also Alloy steels
Chromium iron
White iron

Iron, Alloying additive
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A
Enhanced Superplasticity and Strength in Modified Ti—6Al—4V Alloys. 2535-2544A

Iron, Binary systems
A Further Determination of the Austenite Solidus of the Fe—C System. 312-314A

Iron, Diffusion
Effect of Cold Working on the Hydrogen Trapping Phenomena in Pure Iron. 1299-1305A
Size Effect, Internal Stress and Diffusion Driven Boundary Motion. 1579-1582A
Vapor Transport and DIGM in the Ni—Fe System. 2560-2563A

Iron, Extraction
The Decomposition of Wustite Under Mixed Chemical Reactions/Mass Transport Limitations. 753-759B

Iron, Heat treatment
The Development of Nitrogen Concentration Profiles on Nitriding Iron. 395-399A

Iron, Impurities
Cobalt Extraction in Ammoniacal Solution: Electrochemical Effect of Metallic Iron. 571-576B

Iron, Mechanical properties
An Experimental Investigation of the Internal Methane Pressure in Hydrogen Attack. 963-971A
Some Surprising Features of the Plastic Deformation of Body-Centered Cubic Metals and Alloys. 1237-1256A
Surface Deformation and Crack Initiation During Fatigue of Vacuum Melted Iron: Environmental Effects. 1421-1425A

Iron, Melting
The Electromagnetic Force Field, Fluid Flow Field and Temperature Profiles in Levitated Metal Droplets. 401-410A

Iron, Phase transformations
Influence of Microstructure on the Alpha-Gamma Transformation of Iron. 1511-1512A

Iron, Quaternary systems
The Analysis and Calculation of Equilibria in Complex Metallurgical Systems. 701-710B

Iron, Reactions (chemical)
A Thermodynamic Study of Silica-Saturated Iron Silicate Slags in Equilibrium With Liquid Copper. 101-104B
On the Interfacial Kinetics of the Reaction of CO_2 With Liquid Iron. 504-506B

Iron, Solubility
Non-Steady-State Rates of Dissolution of Iron and Cobalt in Liquid Copper Under Static Conditions. 667-672B

Iron, Sorption
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N—^{14}N$ Isotope Exchange Reaction. 441-449B

Iron and steel making
See also Ironmaking
Steel making
The Correlation of the Thermodynamic Properties of Wustite by a Gaussian-Based Formalism. 771-775A

Iron base alloys
See Ferrous alloys

Iron compounds
See also Hematite
Iron oxides
Magnetite
Pyrrhotite
Wustite

Iron compounds, Diffusion
Diffusivity of Hydrogen and Deuterium at Low Concentration in $Fe_{0.5}Ti_{0.5}$. 1573-1577A

Iron compounds, Oxidation
Oxidation of Ferrous Sulfate in Weakly Acidic Solution by Gas Bubbling. 17-24B
Oxidation of Dense Iron Sulfide. 109-116B

Iron compounds, Reactions (chemical)
A Partial Equilibrium Model to Characterize the Precipitation of Ferric Ion During the Leaching of Chalcopyrite With Ferrite Sulfate. 5-15B
The Vapor—Liquid Equilibria of the Aluminum Chloride—Ferric Chloride System. 301-303B

Iron ores
See also Hematite
Magnetite
Pyrrhotite

Iron ores, Reactions (chemical)
Reaction Rates for Sulfur Fixation With Iron at 1100 to 1275K. 291-300B

Iron ores, Reduction (chemical)
A Study of the Mechanism of Reduction With Hydrogen of Pure Wüstite Single Crystals. 125-132B
Experimental Study of Transverse Bed Motion in Rotary Kilns. 191-205B
The Modeling of Transverse Solids Motion in Rotary Kilns. 207-219B
Thermodynamics of Roasting Arsenopyrite. 239-251B
The Rates of Desulfurization of Liquid Iron by Solid CaO and CaO-Saturated Liquid Iron Oxide at 1600°C. 259-266B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. I.—Effect of Some Operational Variables. 375-381B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. II.—Effect of Kiln Geometry. 383-392B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. III.—Effect of Ring Formation Within the Kiln. 393-399B

Iron oxides
See also Hematite
Magnetite
Wustite

Iron oxides, Reactions (chemical)
Thermodynamics of the System Iron—Aluminum—Oxygen Between 1073 and 1573K. 85-93B

Iron oxides, Solubility
The Solubility of the Liquid Oxysulfide Phase in Liquid Fe—O—S Alloys. 679-683B

Iron powder
See Iron

Ironmaking
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B

Irradiation damage
See Radiation damage

Isostatic pressing
See also Hot isostatic pressing
Practical Applications of Hot Isostatic Pressing Diagrams: Four Case Studies. 211-221A
Influence of Thermomechanical Processing on Low-Cycle Fatigue of Prealloyed Ti—6Al—4V Powder Compacts. 2497-2505A

Isothermal annealing
The Kinetics of Sigma-Phase Precipitation in AISI 310 and AISI 316 Steels. 635-641A

Isothermal treatment
See Isothermal annealing

Isotope separation
A Mass Spectroscopy Study of Palladium Silicide Formation. 2557-2558A

Izod impact tests
See Impact tests

J integral
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A

Jarosite process
Factors Affecting Alkali Jarosite Precipitation. 531-539B

Jet nozzles
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B

Joints
See Welded joints

Junghans Rossi casting
See Continuous casting

Kerosene, Environment
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A

Killed steels
See Aluminum killed steels

Kinetics
See also Reaction kinetics
Kinetics of Austenite—Pearlite Transformation in Eutectoid Carbon Steel. 1803-1815A
On Fatigue Crack Propagation of Titanium Alloys Under Dwell Time Conditions. 2178-2181A

Ladle additions
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B

Ladle metallurgy
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B

Lamellar structure
Method of Analysis of the Regularity of Lamellar Eutectic Structures by Diffraction of a Laser Beam. 105-108B

Lanthanide metals
See Cerium
Europium
Gadolinium
Lanthanum

Lanthanum, Alloying additive
Auger Analysis of Fractured Surfaces of Temper Embrittled 2.25Cr—1Mo Steel Containing Rare Earth Additions. 2558-2560A

Laser beam hardening
A Comparison of the Microstructures of As-Cast and Laser Surface Melted Ti—8Al—4Y. 1979-1988A

Laser beam heating
Composition Control in Laser Surface Alloying. 181-190B
A Fundamental Study of Laser Transformation Hardening. 643-653A
Heat Flow During the Laser Transformation Hardening of Cylindrical Bodies. 1859-1867A

Lasers
Method of Analysis of the Regularity of Lamellar Eutectic Structures by Diffraction of a Laser Beam. 105-108B

Lattice constant
See Lattice parameters

Lattice defects
See Crystal defects

Lattice parameters
Factors Affecting Alkali Jarosite Precipitation. 531-539B
Chi-Carbide in Tempered High-Carbon Martensite. 1033-1045A

Lattice parameters, Diffusion effects
Titanium Alpha-Nitrogen Solid Solution Formed by High-Temperature Nitriding: Diffusion of Nitrogen, Hardness and Crystallographic Parameters. 1537-1543A
Hydrogen-Induced Lattice Expansion in Nickel. 1545-1548A

Lattice parameters, Impurity effects
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A

Lattice vacancies
Steady State Vacancy Concentration Around a Plastic Crack. 1615-1625A

Lattice vacancies, Heating effects
Crystallographic Study of the Tempering of Martensitic Carbon Steel by Electron Microscopy and Diffraction. 1025-1031A

Laves phase, Crystal growth
Intermetallic Phase Formation in 25Cr—3Mo—4Ni Ferritic Stainless Steel. 791-800A

Layers
See Surface layer

Leaching
See also Acid leaching
Alkaline leaching
Ammonia pressure leaching
Dump leaching
In situ leaching
Nitric acid leaching
Sulfuric acid leaching
Oxidation of Ferrous Sulfate in Weakly Acidic Solution by Gas Bubbling. 17-24B
Leaching Kinetics of Malachite in Ammonium Carbonate Solutions. 33-40B
Modeling of Noncatalytic Fluid—Solid Reactions: the Quasisteady State Assumption. 49-53B
Chemical Equilibrium Studies on the Copper—Sulfuric Acid—Kelex 100—Xylene System. 153-158B
A Mathematical Model for the Solution Mining of Primary Copper Ore. I.—Leaching by Oxygen-Saturated Solution Containing No Gas Bubbles. 541-551B
A Mathematical Model for the Solution Mining of Primary Copper Ore: II.—Leaching by Solution Containing Oxygen Bubbles. 553-558B
Oxidation Aspects of the Lime-Concentrate-Pellet Roasting Process. 589-604B

Lead (metal), Alloying elements
The Ductile to Brittle Transition in Tin—Lead Alloys Near Melting Temperatures. 939-946A

Lead (metal), Binary systems
A Correlation of the Thermodynamic Properties and Phase *Diagram of the System Lead—Silver Using a Gaussian* Plus Subregular Formalism. 1707-1712A
The Thermodynamic Properties and Phase Diagram of the Zinc—Lead System. 2211-2218A

Lead (metal), Extraction
Reactions of Sinter in a Lead Blast Furnace. 617-623B

Lead compounds, Reduction (chemical)
Interfacial Effects in Gaseous Reduction of $PbO.SiO_2$ Melts. 693-700B

Least squares method
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B

Leuders lines
See Luders lines

Levitation melting
The Electromagnetic Force Field, Fluid Flow Field and Temperature Profiles in Levitated Metal Droplets. 401-410A
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A

Life
See Fatigue life

Light metals
See Aluminum
Aluminum base alloys
Magnesium
Titanium
Titanium base alloys

Lime, Reactions (chemical)
Kinetics and Sulfur Fixation in the Reduction or Oxidation of Metal Sulfides Mixed With Lime. 175-180B
The Rates of Desulfurization of Liquid Iron by Solid CaO and CaO-Saturated Liquid Iron Oxide at 1600°C. 259-266B
Oxidation Aspects of the Lime-Concentrate-Pellet Roasting Process. 589-604B

Line defects
See Dislocations

Liquid fuels
See Kerosene

Liquid liquid extraction
Concentration of Europium (III) With Supported Liquid Membrane Containing a Xylene Solution of Di-2-Ethylhexyl Phosphoric Acid. 25-31B
Stoichiometry of Liquid—Liquid Extraction of Nickel and Cobalt by LIX63. 41-47B

Liquid metals, Atomic properties
Electron Charge Transfer in Liquid Copper—Tin Alloys. 1748-1750A

Liquid metals, Oxidation
The Dynamic Oxidation of Aluminum and Its Alloys. 625-631B

Liquid metals, Reactions (chemical)
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions With Liquid Silver at 1283K and a Liquid Silicate at 1373K. 267-272B
On the Interfacial Kinetics of the Reaction of CO_2 With Liquid Iron. 504-506B

Liquid metals, Solubility
The Solubility of the Liquid Oxysulfide Phase in Liquid Fe—O—S Alloys. 679-683B

Liquid metals, Sorption
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the ^{15}N—^{14}N Isotope Exchange Reaction. 441-449B

Liquid phase diffusion
See Diffusion

Liquid phase sintering
Segregation to Interphase Boundaries in Liquid-Phase Sintered Tungsten Alloys. 667-677A
Further Comments on Grain Boundary Wetting in Liquid Phase Sintered Fe—Cu Alloys. 977-978A

Liquidus, Impurity effects
The Effect of TiO_2 Additions and Oxygen Potential on Liquidus Temperatures of Some CaO—Al_2O_3 Melts. 685-692B

Lixiviation
See Leaching

Long range order
Weld Microstructure of $(Ni, Fe)_3(V,Ti)$ Long-Range-Ordered Alloy. 1785-1791A

Low alloy steels
See also Boron steels
Silicon steels

Low alloy steels, Castings
The Effect of Cast Structure on the Ductility of Steel Above 900°C. 285-289B

Low alloy steels, Corrosion
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A
Direct Measurement of the Gas Content of Blisters Formed by Hydrogen Attack During Steam Corrosion in a Low-Alloy Steel. 2187-2189A
Hydrogen-Induced Cracking in a Low-Alloy Steel. 2347-2356A

Low alloy steels, Heat treatment
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A

Low alloy steels, Mechanical properties
Retained Austenite and Tempered Martensite Embrittlement *in Medium-Carbon Steels.* 1121-1133A
Heat Treatment for Improvement in Lower-Temperature Mechanical Properties of 0.40% C—Cr—Mo Ultrahigh-Strength Steel. 2387-2393A

Low alloy steels, Nondestructive testing
Grain Size—Acoustic Emission Relationships in Hydrogen-*Induced Delayed Cracking.* 2357-2362A

Low alloy steels, Recovering
Effect of Recycling on Residuals, Processing and Properties *of Carbon and Low-Alloy Steels.* 343-353A

Low alloy steels, Welding
The Cooling Behavior of Deep Penetration Welds Undergoing *Austenite—Ferrite Transformation.* 483-486B

Low cycle fatigue
Fatigue Oxidation Interaction in a Superalloy—Application to *Life Prediction in High-Temperature Low-Cycle Fatigue.* 141-149A
Crack Propagation of Steels During Low-Cycle Thermal-Mechanical and Isothermal Fatigue at Elevated Temperatures. 1641-1648A
Effect of Strain Wave Shape on Low-Cycle Fatigue Crack Propagation of SUS304 Stainless Steel at Elevated Temperatures. 1649-1659A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A

Low cycle fatigue, Microstructural effects
Influence of Thermomechanical Processing on Low-Cycle Fatigue of Prealloyed Ti—6Al—4V Powder Compacts. 2497-2505A

Low cycle fatigue, Stress effects
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A

Low temperature
Improvement in Lower Temperature Mechanical Properties of 0.40% C—Ni—Cr—Mo Ultrahigh Strength Steel With *the Second-Phase Lower Bainite.* 485-492A

Luders bands
See Luders lines

Luders lines
Determination of Lüders Strains and Flow Properties in Steels From Hardness/Microhardness Tests. 1607-1613A

Luders lines, Alloying effects
Effect of Solutes on Lüders Strain in Low-Carbon Sheet Steels. 85-91A

Machining
See Electric discharge machining

Magnesium, Alloying elements
The Dynamic Oxidation of Aluminum and Its Alloys. 625-631B

Magnesium, Extraction
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B

Magnesium compounds, Reactions (chemical)
Oxide—Sulfate Equilibria in the Magnesium, Nickel and Manganese Systems Measured by a Solid K_2SO_4 Concentration Cell. 117-124B

Magnesium compounds, Reduction (chemical)
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B

Magnetic materials
See Magnetite

Magnetic properties
See Coercive force

Magnetite, Crystal growth
Rate Processes and Structural Changes in Gaseous Reduction of Hematite Particles to Magnetite. 743-752B

Magnetite, Melting
Prereduction and Melting of Domestic Titaniferous Materials. 55-62B

Magnetite, Physical properties
The Conditions for the Formation of Lath and Porous Magnetite on Reduction of Hematite in H_2/H_2O Gas Mixtures. 513-514B

Magnetite, Reactions (chemical)
A Solid-State E.M.F. Study of the Pyrrhotite—Magnetite Equilibrium in the Temperature Interval 850 to 1275K. 459-464B

Malcomizing
See Nitriding

Manganese, Alloying additive
Hydrogen-Induced Cracking in 4340-Type Steel: Effects of Composition, Yield Strength and Hydrogen Pressure. 881-888A

Manganese, Alloying elements
Low-Cycle Fatigue of Ti—Mn Alloys: Microstructural Aspects of Fatigue Crack Growth. 1481-1486A
A Rationalization of Tensile Ductility and Fracture in Alpha-Beta Ti—Mn Alloys. 2043-2053A

Manganese, Binary systems
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A

Manganese base alloys, Mechanical properties
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A

Manganese base alloys, Thermal properties
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A

Manganese compounds, Reactions (chemical)
Oxide—Sulfate Equilibria in the Magnesium, Nickel and Manganese Systems Measured by a Solid K_2SO_4 Concentration Cell. 117-124B

Manganese steels, Mechanical properties
Tempering of Manganese and Mn—Si—V Dual-Phase Steels. 1079-1087A
Fatigue Crack Propagation in Intercritically Tempered Fe—9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A

Maraging steels, Phases (state of matter)
The Mechanical Stability of Austenite in Maraging Steels. 801-808A

Martensite
Retained Austenite and Tempered Martensite Embrittlement in Medium-Carbon Steels. 1121-1133A
The Microstructure of Rapidly Solidified Beta-Phase Cu—Zn—Al Alloys. 2229-2234A

Martensite, Crystal growth
Characteristics of Lath Martensite. I.—Crystallographic and Substructural Features. 809-822A
Characteristics of Lath Martensite. III.—Some Theoretical Considerations. 835-844A

Martensite, Crystal lattices
Characteristics of Lath Martensite. II.—The Martensite/Austenite Interface. 823-834A
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A
The Substructure of $(252)_t$ Martensite Formed in an Fe—8Cr—1C Alloy. 2455-2468A
Some Crystallographic Characteristics of the $(252)_t$ Martensite Transformation in Iron Alloys. 2469-2477A

Martensite, Mechanical properties
Strength of Initially Virgin Martensites at −196°C After Aging and Tempering. 1007-1012A
The Tensile Properties of an Fe—4%Mo—0.2%C Martensite Tempered Under Applied Stress. 1067-1077A
The Evaluation of Tempered Martensite Embrittlement in 4130 Steel by Instrumented Charpy V-Notch Testing. 1109-1119A

Martensite, Microstructure
Chi-Carbide in Tempered High-Carbon Martensite. 1033-1045A

Martensite, Phase transformations
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A

Martensite, Structural hardening
An Atom Probe Study of the Aging of Iron—Nickel—Carbon Martensite. 1021-1024A
Early Stages of Aging and Tempering of Ferrous Martensites. 1057-1065A

Martensitic stainless steels, Mechanical properties
The Influence of the $M_{23}(C,N)_6$ Compound on the Mechanical Properties of Type 422 Stainless Steel. 1395-1408A
The Effects of Heat Treatment on Fracture Toughness and Fatigue Crack Growth Rates in 440C and BG42 Steels. 1899-1906A

Martensitic transformations
Martensitic Transformation Cycling Effects in Cu—Zn—Al Shape Memory Alloys. 33-36A
Quantitative Geometric Characterization of High-Carbon Martensite. 163-173A
Characteristics of Lath Martensite. III.—Some Theoretical Considerations. 835-844A
Opening of the Peter G. Winchell Symposium on the Tempering of Steel. 991-993A
Some Crystallographic Characteristics of the $(252)_t$ Martensite Transformation in Iron Alloys. 2469-2477A

Martensitic transformations, Heating effects
The Effect of Thermal Cycling on the Thermoelastic Martensitic Transformation in a Cu—Zn—Al Alloy. 1293-1297A

Martensitic transformations, Microstructural effects
Influence of Microstructure on the Alpha-Gamma Transformation of Iron. 1511-1512A
The Effect of Fine Grain Size on the M_s Temperature in Fe—27Ni—0.025C Alloys. 1929-1931A

Mass spectroscopy
Direct Measurement of the Gas Content of Blisters Formed by Hydrogen Attack During Steam Corrosion in a Low-Alloy Steel. 2187-2189A

Mass transfer
Concentration of Europium (III) With Supported Liquid Membrane Containing a Xylene Solution of Di-2-Ethylhexyl Phosphoric Acid. 25-31B
Modeling of Noncatalytic Fluid—Solid Reactions: the Quasisteady State Assumption. 49-53B
Oxidation of Dense Iron Sulfide. 109-116B
The Electromagnetic Force Field, Fluid Flow Field and Temperature Profiles in Levitated Metal Droplets. 401-410A
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B
Turbulent Natural Convection Along a Vertical Electrode. 633-643B
Non-Steady-State Rates of Dissolution of Iron and Cobalt in Liquid Copper Under Static Conditions. 667-672B
The Decomposition of Wustite Under Mixed Chemical Reactions/Mass Transport Limitations. 753-759B

Materials
See also Charge materials
Materials, Materialism and Search for Meaning—an Essay. 147-152B
Materials, Materialism and Search for Meaning—an Essay. 513-518A

Materials testing
See Conductiometric analysis
Depth profiling
Microanalysis

Mathematical analysis
Modeling of Noncatalytic Fluid—Solid Reactions: the Quasisteady State Assumption. 49-53B
On the Deformation of Flow Properties From Compression Tests. 155-156A
Kinetic Enrichment of Hydrogen at Interfaces and Voids by Dislocation Sweep-In of Hydrogen. 385-393A
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B
The Effect of Temperature, Specimen Size and Geometry on the Fracture Toughness of a 3% NiCrMoV Low-Pressure Turbine Disk Steel. 751-759A
On the Definition of Microhardness. 947-952A
Crack Propagation of Steels During Low-Cycle Thermal-Mechanical and Isothermal Fatigue at Elevated Temperatures. 1641-1648A
Hydrogen Pressure Dependence of the Fracture Mode Transition in Nickel. 1729-1738A
A Note on the Theoretical Treatment of Up-Hill Diffusion in Compound Welds. 2167-2170A
Evaluation of an Empirical Representation of Ternary Diffusion Paths in a System With Constant Diffusion Coefficients. 2479-2485A
On the Determination of Hill's Plastic Strain Ratio. 2566-2567A

Mathematical models
Ternary Diffusion: the ($^2\tilde{D}$) Matrix of an Ideal Solid Solution. 45-51A
The Hall—Héroult Cell: Some Design Alternatives Examined by a Mathematical Model. 63-70B
The Modeling of Transverse Solids Motion in Rotary Kilns. 207-219B
An Improved Mathematical Model for Melt Flow in Induction Furnaces and Comparison With Experimental Data. 306-308B
Heat Transfer From Flames in a Rotary Kiln. 411-424B
A Mathematical Model of a Drum and Ring Horizontal Strip Casting Process. 487-493B
A Mathematical Model for the Solution Mining of Primary Copper Ore. I.—Leaching by Oxygen-Saturated Solution Containing No Gas Bubbles. 541-551B
A Mathematical Model for the Solution Mining of Primary Copper Ore: II.—Leaching by Solution Containing Oxygen Bubbles. 553-558B
Cupric Chloride Leaching of Model Sulfur Compounds for Simple Copper Ore Concentrates. 559-570B
Leaching of Bornite in Acidified Ferric Chloride Solutions. 577-588B
Heat Flow Model for Surface Melting and Solidification of an Alloy. 1169-1177A
Plastic Behavior of Aluminum-Killed Steel Following Plane-Strain Deformation. 1487-1495A
Three-Dimensional Heat Flow and Solidification During the Autogenous GTA Welding of Aluminum Plates. 2245-2253A

Mathematics
See Finite element method
Mathematical analysis
Mathematical models

Mattes
See Copper mattes

Measurement
See Heat measurement

Measuring instruments
See Anemometers
Calorimeters
Probes

Mechanical finishing
See Shot peening

Mechanical properties
See also Abrasion resistance
Brittleness
Compressive strength
Creep (materials)
Creep life
Creep rate
Creep rupture strength
Creep strength
Ductile brittle transition
Ductility
Elongation
Fatigue (materials)
Fatigue life
Fatigue limit
Fatigue strength
Fracture strength
Fracture toughness
Hardness
Hydrogen embrittlement
Impact strength
Microhardness
Modulus of elasticity
Notch toughness
Plastic flow
Plasticity
Residual stress
Shear strength
Shear stress
Superplasticity
Temper brittleness
Tensile properties
Tensile strength
Toughness
Yield strength

Mechanical properties, Impurity effects
Nickel-Base Superalloys: Physical Metallurgy of Recycling. 329-341A

Mechanical properties, Microstructural effects
A Comparison of the Microstructures of As-Cast and Laser Surface Melted Ti—8Al—4Y. 1979-1988A

Mechanical tests
See Compression tests
Hardness tests
Hydrostatic tests
Impact tests
Tension tests
Torsion tests

Mechanics
See Fluid dynamics
Fracture mechanics
J integral
Kinetics

Melt spinning
Pool Boiling Cooling for Melt Spinning Quench Wheels. 71-76B
Process and Structural Aspects of Melt-Spun Nickel-Base Superalloy Ribbons. 1817-1823A
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A

Melting
See also Electron beam melting
Induction melting
Levitation melting
Vacuum induction melting
Heat Flow Model for Surface Melting and Solidification of an Alloy. 1169-1177A

Memory (shape)
See Shape memory

Metal carbides
See Tungsten carbide

Metal powders, Microstructure
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A

Metal powders, Oxidation
The Oxidation-Reduction Kinetics of Palladium Powder. 95-99B

Metal scrap, Melting
Nickel-Base Superalloys: Physical Metallurgy of Recycling. 329-341A

Metal working
See Ausforming
Cold working
Controlled rolling
Deep drawing
Forging
Hot rolling
Stretch forming
Superplastic forming
Thermomechanical treatment
Warm working
Wire drawing

Metallic glasses, Casting
Pool Boiling Cooling for Melt Spinning Quench Wheels. 71-76B

Metallic glasses, Magnetic properties
Correlation Between Microstructure and Coercivity of Amorphous $(Fe_{0.82}B_{0.18})_{0.90}Tb_{0.05}La_{0.05}$ Alloy Ribbons. 953-961A

Metallic glasses, Mechanical properties
Plastic Constraint and Ductility in Tensile Notched Specimens of Amorphous $Pd_{78}Cu_6Si_{16}$. 709-716A

Metallographic structures
See Microstructure

Metallography
See also Image analysis
Quantitative metallography
Metallography of Fatigue Crack Initiation in an Overaged High-Strength Aluminum Alloy. 931-938A

Metalloid compounds
See Arsenic compounds
Silicon carbide

Metalloids
See Arsenic
Boron
Silicon

Metallurgical constituents
See Laves phase
Sigma phase

Metathesis
See Decomposition reactions

Microalloyed steels
See High strength low alloy steels

Microanalysis
STEM-EDS X-Ray Microanalysis of Small Precipitates in Iron-Base Thin Foils. 1943-1949A

Microhardness
On the Definition of Microhardness. 947-952A
Determination of Lüders Strains and Flow Properties in Steels From Hardness/Microhardness Tests. 1607-1613A

Microhardness, Heating effects
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A

Microhardness, Microstructural effects
Investigation of the Early Stages of Deformation of Two-Phase Copper—Aluminum Alloys. 2407-2413A

Microparticles
See Particles

Microscopy
See Scanning electron microscopy
Transmission electron microscopy

Microshrinkage
See Shrinkage

Microstructure
See also Lamellar structure
An Atom Probe Study of the Aging of Iron—Nickel—Carbon Martensite. 1021-1024A
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A
Process and Structural Aspects of Melt-Spun Nickel-Base Superalloy Ribbons. 1817-1823A
Influence of Nonsteady State Behavior on Superplastic Deformation of a 25.7Cr—6.6Ni Stainless Steel. 1875-1882A
Enhanced Stress Corrosion Resistance From Steels Having a Dual-Phase Austenite—Martensite Microstructure. 1921-1928A
Elastic Interaction of Two Precipitates Subjected to an Applied Stress Field. 2219-2227A
Three-Dimensional Heat Flow and Solidification During the Autogenous GTA Welding of Aluminum Plates. 2245-2253A
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A

Microstructure, Alloying effects
High-Cycle Fatigue of $(Fe, Ni, Co)_3V$ Type Alloys. 1997-2003A

Microstructure, Cooling effects
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B
Precipitation Reactions During the Heat Treatment of Ferritic Steels. 1047-1055A
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A
Microstructural Modification of Austenitic Stainless Steels by Rapid Solidification. 1833-1841A
Microstructure and Mechanical Properties of Zn—Al Alloys at Room Temperature. 1931-1934A

Microstructure, Deformation effects
The Occurrence of Shear Bands in Nonisothermal, Hot Forging of Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 105-115A
Effect of Processing Variables on Resultant Microstructure and Properties of C—Mn—Si Steel. 308-312A
Thermomechanical Treatments of a 1050 Pearlite Steel. 365-378A
Alpha/Beta Interface Sliding in Ti—Mn Alloys. 500-503A
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A
Deformation Behavior of Blended Elemental Ti—6Al—4V Compacts. 761-769A
The Effect of Prior Heat Treatments on the Structure and Properties of Warm Rolled AISI 52100 Steel. 1427-1433A
Processing—Microstructure Relationships for Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 2363-2374A

Microstructure, Heating effects
Microstructural Sources of Toughness in QLT-Treated 5.5Ni Cryogenic Steel. 93-103A
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A
Microstructure and Tensile Ductility in a Beta Heat Treated Titanium Alloy. 413-420A
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A
Early Stages of Aging and Tempering of Ferrous Martensites. 1057-1065A
A TEM Study of Microstructural Changes During Retrogression and Reaging in 7075 Aluminum. 1843-1850A
A Comparison of the Microstructures of As-Cast and Laser Surface Melted Ti—8Al—4Y. 1979-1988A

Microstructure, High temperature effects
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A

Microstructure, Impurity effects
Nickel-Base Superalloys: Physical Metallurgy of Recycling. 329-341A

Microstructure, Stress effects
Martensitic Transformation Cycling Effects in Cu—Zn—Al Shape Memory Alloys. 33-36A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A

Microstructure, Welding effects
Effect of Solidification Conditions on the Solidification Mode in Austenitic Stainless Steels. 191-197A
Microstructural Origin of the Skeletal Ferrite Morphology of Austenitic Stainless Steel Welds. 1271-1281A

Mill scale
See Scale (corrosion)

Mining
See also Underground mining
Atlas Never Shrugged. 519B
Atlas Never Shrugged. 2199-2208A

Mobility
See Dislocation mobility

Modified Bauer Vogel process
See Anodizing

Modulus of elasticity
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A
The Mechanical Properties of Cellular Solids. 1755-1769A

Moistening
See Wetting

Moisture
See Water

Molten metals
See Liquid metals

Molten salts
See Fused salts

Molybdenum, Alloying additive
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

Molybdenum, Alloying elements
On the Corrosion Fatigue Behavior of a Modified SAE 4135 Type Steel in a H_2S Environment. 1737-1742A
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Molybdenum, Diffusion
The Mechanical Stability of Austenite in Maraging Steels. 801-808A

Molybdenum, Heat treatment
Carbon Diffusion in Mo_2C As Determined From Carburization of Molybdenum. 199-202A

Molybdenum base alloys, Mechanical properties
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A

Molybdenum chromium nickel steels
See Nickel chromium molybdenum steels

Molybdenum chromium steels
See Chromium molybdenum steels

Molybdenum compounds, Diffusion
Carbon Diffusion in Mo_2C As Determined From Carburization of Molybdenum. 199-202A

Molybdenum nickel chromium steels
See Nickel chromium molybdenum steels

Molybdenum nickel steels
See Nickel molybdenum steels

Molybdenum steels
See also Chromium molybdenum steels
Chromium molybdenum vanadium steels
Nickel chromium molybdenum steels
Nickel molybdenum steels

Molybdenum steels, Mechanical properties
Tempered Martensite Embrittlement in Fe—Mo—C and Fe—W—C Steel. 1389-1394A

Monocrystals
See Single crystals

Mossbauer effect
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A

Multipurpose reactors
See Nuclear reactors

Necking
Operant Strain-Rate Sensitivity During Tensile Necking. 2395-2406A

Necking, Microstructural effects
Deformation and Fracture of Strongly Textured Titanium Alloy Sheets in Uniaxial Tension. 1333-1342A

Nickel, Alloying additive
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A
Enhanced Superplasticity and Strength in Modified Ti—6Al—4V Alloys. 2535-2544A

Nickel, Alloying elements
Composition Control in Laser Surface Alloying. 181-190B
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A
Strength of Initially Virgin Martensites at —196°C After Aging and Tempering. 1007-1012A
An Atom Probe Study of the Aging of Iron—Nickel—Carbon Martensite. 1021-1024A
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A

Nickel, Binary systems
Activities in Nickel—Bismuth Alloys. 765-768B
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A

Nickel, Crystal lattices
Hydrogen-Induced Lattice Expansion in Nickel. 1545-1548A

Nickel, Diffusion
Grain Boundary Segregation in Nickel and Binary Nickel Alloys Doped With Sulfur. 865-870A
Calculations of the Binding of Hydrogen to Fixed Interstitial Impurities in Nickel. 1257-1260A
Low-Temperature Diffusivity Measurements in the FeNi System Using STEM Techniques. 2437-2439A
Vapor Transport and DIGM in the Ni—Fe System. 2560-2563A

Nickel, Extraction
Stoichiometry of Liquid—Liquid Extraction of Nickel and Cobalt by LIX63. 41-47B
The Carbothermal Reduction of Nickel Sulfide in the Presence of Lime. 605-615B

Nickel, Mechanical properties
Influence of Sulfur, Phosphorus and Antimony Segregation on the Intergranular Hydrogen Embrittlement of Nickel. 223-232A
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A
High-Temperature Embrittlement of Nickel and Ni—Cr Alloys by Trace Elements. 595-610A
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A
Hydrogen Pressure Dependence of the Fracture Mode Transition in Nickel. 1729-1736A

Nickel, Sorption
Observation of Local Hydrogen on Nickel Surfaces. 2440-2442A

Nickel, Ternary systems
Evaluation of an Empirical Representation of Ternary Diffusion Paths in a System With Constant Diffusion Coefficients. 2479-2485A

Nickel base alloys
See also Nickel chromium alloys

Nickel base alloys, Casting
Process and Structural Aspects of Melt-Spun Nickel-Base Superalloy Ribbons. 1817-1823A

Nickel base alloys, Composite materials
Chemistry and Distribution of Phases Produced by Solid State SiC/NiCrAl Reaction. 781-790A

Nickel base alloys, Corrosion
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A
The Effects of Heat Treatment and Composition on the Stress Corrosion Cracking Resistance of Inconel Alloy X-750. 133-139A
Internal Chloridation of Dilute Ni—Cr Alloys. 509B

Nickel base alloys, Diffusion
Grain Boundary Segregation in Nickel and Binary Nickel Alloys Doped With Sulfur. 865-870A
An Analysis of Concentration Profiles for Fluxes, Diffusion Depths and Zero-Flux Planes in Multicomponent Diffusion. 1851-1858A

Nickel base alloys, Mechanical properties
Anelastic Relaxation Controlled Cyclic Creep and Cyclic Stress Rupture Behavior of an Oxide Dispersion-Strengthened Alloy. 241-247A
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A
Crack and Cavity Nucleation at Interfaces During Creep. 547-561A
The Effect of Cerium on High-Temperature Tensile and Creep Behavior of a Superalloy. 611-621A
S—N Curve Inversion of a Nickel-Base Superalloy at Elevated Temperature. 727-731A
The Effects of Boron and Zirconium on the Creep and Fatigue Crack Growth Behavior of a Nickel-Base Superalloy. 895-901A
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A
Microstructure and Mechanical Properties of Rapidly Quenched $L1_2$ Alloys in Ni—Al—X Systems. 1367-1377A
Cyclic Creep and Stress Rupture of a Mechanically Alloyed Oxide Dispersion and Precipitation Strengthened Nickel-Base Superalloy. 1435-1441A
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A
High-Cycle Fatigue of $(Fe, Ni, Co)_3V$ Type Alloys. 1997-2003A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A
An Investigation on the Creep and Fracture Behavior of Cast Nickel-Base Superalloy IN738LC. 2329-2335A

Nickel base alloys, Microstructure
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A

Nickel base alloys, Oxidation
Oxidation of Carburized Hastelloy X. 1518-1521A
Structure of Transient Oxides Formed on NiCrAl Alloys. 2143-2161A

Nickel base alloys, Phases (state of matter)
Orientation Relationships Between B.C.C. Molybdenum and F.C.C. Gamma in a Nickel—Aluminum—Molybdenum—Tungsten Superalloy. 493-498A
Phase Composition and Phase Stability of a High-Chromium Nickel-Based Superalloy, IN939. 1771-1783A

Nickel base alloys, Powder technology
Practical Applications of Hot Isostatic Pressing Diagrams: Four Case Studies. 211-221A
Microstructures and Mechanical Properties of Hot Isostatically Pressed Powder Metallurgy Alloy APK-1. 733-742A
Flow Localization Accompanying the Intergranular Fracture of Ni_3Al. 1523-1524A
The Effect of Microstructure on 650°C Fatigue Crack Growth in P/M Astroloy. 2301-2308A

Nickel base alloys, Reactions (chemical)
Solid-State SiC/Ni Alloy Reaction. 355-364A
Phase Equilibria and Kinetics in the Solid-State Reaction Between Silicon and NiCrAl. 1549-1560A

Nickel base alloys, Recovering
Nickel-Base Superalloys: Physical Metallurgy of Recycling. 329-341A

Nickel base alloys, Structural hardening
Discontinuous Gamma Prime Coarsening in a Ni—Al—Mo Base Superalloy. 1283-1292A
A Study of a Cellular Phase Transformation in the Ternary Ni—Al—Mo Alloy System. 1561-1571A

Nickel base alloys, Thermal properties
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A

Nickel base alloys, Welding
Weld Microstructure of (Ni, Fe)$_3$(V,Ti) Long-Range-Ordered Alloy. 1785-1791A

Nickel chromium alloys, Mechanical properties
High-Temperature Embrittlement of Nickel and Ni—Cr Alloys by Trace Elements. 595-610A

Nickel chromium molybdenum steels, Corrosion
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Nickel chromium molybdenum steels, Mechanical properties
Improvement in Lower Temperature Mechanical Properties of 0.40% C—Ni—Cr—Mo Ultrahigh Strength Steel With the Second-Phase Lower Bainite. 485-492A
The Effect of Temperature, Specimen Size and Geometry on the Fracture Toughness of a 3% NiCrMoV Low-Pressure Turbine Disk Steel. 751-759A
Hydrogen-Induced Cracking in 4340-Type Steel: Effects of Composition, Yield Strength and Hydrogen Pressure. 881-888A
The Micromechanisms of Tempered Martensite Embrittlement in 4340-Type Steels. 1313-1325A
Comparison of the Plane Strain Crack Arrest Fracture Toughness of 4340, 4140 and 1340 Steel. 1459-1465A
Anisotropic Embrittlement in High-Hardness ESR 4340 Steel Forgings. 1661-1669A

Nickel chromium steels
See also Nickel chromium molybdenum steels

Nickel chromium steels, Corrosion
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Nickel chromium steels, Mechanical properties
Solute Segregation and Hydrogen-Induced Intergranular Fracture in an Alloy Steel. 903-911A

Nickel compounds, Reactions (chemical)
Oxide—Sulfate Equilibria in the Magnesium, Nickel and Manganese Systems Measured by a Solid K_2SO_4 Concentration Cell. 117-124B

Nickel molybdenum chromium steels
See Nickel chromium molybdenum steels

Nickel molybdenum steels
See also Nickel chromium molybdenum steels

Nickel molybdenum steels, Mechanical properties
Crack Propagation of High-Strength Steels in a Gaseous Hydrogen Atmosphere. 717-726A

Nickel ores, Reduction (chemical)
Experimental Study of Transverse Bed Motion in Rotary Kilns. 191-205B
The Modeling of Transverse Solids Motion in Rotary Kilns. 207-219B
The Carbothermal Reduction of Nickel Sulfide in the Presence of Lime. 605-615B

Nickel steels
See also Nickel chromium molybdenum steels
Nickel chromium steels
Nickel molybdenum steels

Nickel steels, Heat treatment
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A

Nickel steels, Mechanical properties
Microstructural Sources of Toughness in QLT-Treated 5.5Ni Cryogenic Steel. 93-103A
Fatigue Crack Propagation in Intercritically Tempered Fe—9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A
The Nature of Quasicleavage Fracture in Tempered 5.5Ni Steel After Hydrogen Charging. 1883-1888A

Niobium, Alloying additive
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

Niobium, Alloying elements
Austenite Grain Coarsening in Microalloyed Steels. 1989-1995A

Niobium, Crystal lattices
Hydrogen-Induced Lattice Expansion in Nickel. 1545-1548A

Niobium, Diffusion
Hydrogen Permeation and Diffusion in Niobium. 203-210A

Niobium, Mechanical properties
Effects of Hydrogen on Near-Threshold Crack Propagation in Niobium. 701-707A

Niobium, Solubility
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A

Niobium, Structural hardening
On the Portevin—Le Chatelier Effect Due to Snoek Strain Aging in the Niobium—Oxygen System. 463-469A

Niobium base alloys, Diffusion
Thermotransport of Hydrogen and Deuterium in Vanadium—Niobium, Vanadium—Titanium and Vanadium—Chromium Alloys. 871-874A
Activity and Diffusivity of Oxygen in Tantalum- and Niobium-Base Alloys. 2117-2123A

Niobium compounds, Powder technology
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A
Laboratory Extrusion of Nb_3Sn. 2295-2299A

Nitrates, Environment
Determination of Fatigue Crack Growth in Incoloy Alloy 800 in Molten Nitrate Salt. 314-317A

Nitric acid leaching
A Kinetic Study of Leaching of Coal Pyrite With Nitric Acid. 317-324B

Nitrides, Crystal growth
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A

Nitriding
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A
The Development of Nitrogen Concentration Profiles on Nitriding Iron. 395-399A
Titanium Alpha-Nitrogen Solid Solution Formed by High-Temperature Nitriding: Diffusion of Nitrogen, Hardness and Crystallographic Parameters. 1537-1543A

Nitrogen, Sorption
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N—^{14}N$ Isotope Exchange Reaction. 441-449B

Nitrogen compounds
See Nitrates
Nitrides

Noble metals
See Precious metals

Nonferrous smelting
See Smelting

Nonmetallic inclusions
Effect of Sulfide Inclusion Morphology and Pearlite Banding on Anisotropy of Mechanical Properties in Normalized C—Mn Steels. 271-283A
Effect of Sulfides and Sulfide Morphology on Anisotropy of Tensile Ductility and Toughness of Hot Rolled C—Mn Steels. 471-484A

Notch brittleness
See Brittleness

Notch ductility
See Ductility

Notch impact strength
See Impact strength

Notch impact tests
See Impact tests

Notch toughness, Heating effects
Heat Treatment for Improvement in Lower-Temperature Mechanical Properties of 0.40% C—Cr—Mo Ultrahigh-Strength Steel. 2387-2393A

Notch toughness, Microstructural effects
Effect of Sulfide Inclusion Morphology and Pearlite Banding on Anisotropy of Mechanical Properties in Normalized C—Mn Steels. 271-283A
Improvement in Lower Temperature Mechanical Properties of 0.40% C—Ni—Cr—Mo Ultrahigh Strength Steel With the Second-Phase Lower Bainite. 485-492A

Notched bar tensile test
See Tension tests

Nozzles
See Jet nozzles

Nuclear reactors
See also Gas cooled reactors
Oxidation of Carburized Hastelloy X. 1518-1521A

Nucleation
Factors Affecting Alkali Jarosite Precipitation. 531-539B

Nuclei (transformation)
See Nucleation

Operating conditions
See Environment

Optical masers
See Lasers

Order disorder
See also Long range order
The Kinetics of Disperse Order Development in Alpha-CuAl Alloys. 875-880A
DO_3-Domain Growth Kinetics in the Fe—20 At.% Al—5 At.% Si Alloy. 2435-2437A

Ordering
See Order disorder

Ores
See Bornite
Chalcopyrite
Copper ores
Hematite
Ilmenite
Iron ores
Magnetite
Nickel ores
Pyrrhotite

Orientation
See also Grain orientation
On the R-Value Measurements. 1199-1205A

Overaging
The Effects of Heat Treatment and Composition on the Stress Corrosion Cracking Resistance of Inconel Alloy X-750. 133-139A

Oxidation
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al Alloy at 973 to 1073K. 1207-1211A
Oxide Scale Induced Cleavage Fracture in an ODS Fe—Cr—Al Alloy. 1516-1518A
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Oxidation, Temperature effects
The Sulfidation/Oxidation of Armco Iron-Based Superalloys Between 1023 and 1373K. 657-665B

Oxidation potential
See Electrode potentials

Oxidation rate
Oxidation of Dense Iron Sulfide. 109-116B
Oxidation of Carburized Hastelloy X. 1518-1521A

Oxidation rate, Pressure effects
The Dynamic Oxidation of Aluminum and Its Alloys. 625-631B

Oxidation rate, Stress effects
Fatigue Oxidation Interaction in a Superalloy—Application to Life Prediction in High-Temperature Low-Cycle Fatigue. 141-149A

Oxidation reduction potential
See Electrode potentials

Oxidation resistance
Structure of Transient Oxides Formed on NiCrAl Alloys. 2143-2161A

Oxide coatings
See Anodic coatings

Oxides
See also Aluminum oxide
Carbon dioxide
Carbon monoxide
Iron oxides
Lime
Sulfur dioxide
Titanium dioxide
Wustite

Oxides, Reactions (chemical)
On Binary P-T Phase Diagrams. 231-237B
Thermochemistry of Na_2O—WO_3 System at 1065 to 1239K. 1713-1720A

Oxides, Reduction (chemical)
The Oxidation-Reduction Kinetics of Palladium Powder. 95-99B
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B

Oxidizing
See Oxidation

Oxygen
A Mathematical Model for the Solution Mining of Primary Copper Ore: II.—Leaching by Solution Containing Oxygen Bubbles. 553-558B

Oxygen, Binary systems
A Thermodynamic Analysis of the Cu—O System With an Associated Solution Model. 473-481B

Oxygen, Diffusion
Diffusivity and Solubility of Oxygen in Solid Copper Using Potentiostatic and Potentiometric Techniques. 673-677B
Activity and Diffusivity of Oxygen in Tantalum- and Niobium-Base Alloys. 2117-2123A

Oxygen, Environment
Surface Deformation and Crack Initiation During Fatigue of Vacuum Melted Iron: Environmental Effects. 1421-1425A

Oxygen, Impurities
On the Portevin—Le Chatelier Effect Due to Snoek Strain Aging in the Niobium—Oxygen System. 463-469A

Oxygen, Reactions (chemical)
A Thermodynamic Study of Silica-Saturated Iron Silicate Slags in Equilibrium With Liquid Copper. 101-104B

Oxygen, Ternary systems
Predominance Area Diagrams of the System Co—S—O Between 583 and 1148K. 506-509B

Packing (crystal density)
See Crystal structure

Painting
Insoluble Surface Carbon on Steel Sheet Annealed in Hydrogen—Nitrogen Atmosphere. 369-373B

Palladium, Powder technology
The Oxidation-Reduction Kinetics of Palladium Powder. 95-99B

Palladium, Reactions (chemical)
A Mass Spectroscopy Study of Palladium Silicide Formation. 2557-2558A

Palladium base alloys, Mechanical properties
Plastic Constraint and Ductility in Tensile Notched Specimens of Amorphous $Pd_{78}Cu_6Si_{16}$. 709-716A

Palladium compounds, Reduction (chemical)
The Oxidation-Reduction Kinetics of Palladium Powder. 95-99B

Parameters
See Lattice parameters

Partial pressure
On Binary P-T Phase Diagrams. 231-237B

Particle size
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Particle size, Cooling effects
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A

Particle size distribution
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A
An Investigation on the Creep and Fracture Behavior of Cast Nickel-Base Superalloy IN738LC. 2329-2335A

Particles
See also Wear particles

Particles, Reduction (chemical)
Rate Processes and Structural Changes in Gaseous Reduction of Hematite Particles to Magnetite. 743-752B

Passivation
Kinetics of the F, F_2/Gd(s,v) Reactions. 53-60A

Patterns
See Diffraction patterns

Peening
See Shot peening

Pellets, Reduction (chemical)
The Influence of Carbon Deposition on the Reduction Kinetics of Commercial-Grade Hematite Pellets With CO, Hydrogen and Nitrogen. 359-367B

Penetration
Calculation Method of Equilibrium Composition in the Carbon—Hydrogen—Oxygen System and Its Application to Environments of a High-Temperature Gas-Cooled Reactor. 465-471B

Peritectic reactions
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A

Permanent mold castings, Mechanical properties
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B

Permeability
Hydrogen Permeation and Diffusion in Niobium. 203-210A

Permeability, Pressure effects
Tritium Permeability and Pressure Dependence of 304L Stainless Steel in the Temperature Range 723 to 1023K. 498-500A

Permeation
See Penetration

Phase decomposition
See also Eutectoid decomposition
Development and Application of Growth Models for Grain Boundary Allotriomorphs of a Stoichiometric Compound in Ternary Systems. 1261-1269A
Microstructural Development in Complex Nickel—Aluminum Bronzes. 1951-1956A

Phase decomposition, Heating effects
Crystallographic Study of the Tempering of Martensitic Carbon Steel by Electron Microscopy and Diffraction. 1025-1031A

Phase diagram reactions
See also Austenitizing
Eutectoid decomposition
Martensitic transformations
Peritectic reactions
Phase decomposition
Thermodynamics of the System Iron—Aluminum—Oxygen Between 1073 and 1573K. 85-93B
Effect of Silicon on the Solubility Product of Vanadium Carbide in Austenite and on Other Phase Equilibria in Fe—V—Si—C Alloys at 993°C. 307-308A

Phase diagrams
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B
A Further Determination of the Austenite Solidus of the Fe—C System. 312-314A
A Thermodynamic Analysis of the Cu—O System With an Associated Solution Model. 473-481B
Predominance Area Diagrams of the System Co—S—O Between 583 and 1148K. 506-509B
The Analysis and Calculation of Equilibria in Complex Metallurgical Systems. 701-710B
Activities in Nickel—Bismuth Alloys. 765-768B
The Kinetics of Disperse Order Development in Alpha-CuAl Alloys. 875-880A
A Correlation of the Thermodynamic Properties and Phase Diagram of the System Lead—Silver Using a Gaussian Plus Subregular Formalism. 1707-1712A
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A
The Thermodynamic Properties and Phase Diagram of the Zinc—Lead System. 2211-2218A

Phase stability
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A
Orientation Relationships Between B.C.C. Molybdenum and F.C.C. Gamma in a Nickel—Aluminum—Molybdenum—Tungsten Superalloy. 493-498A

The Mechanical Stability of Austenite in Maraging Steels. 801-808A
Fatigue of Annealed and Cold Worked Stable and Unstable Stainless Steels. 2077-2084A

Phase stability, Heating effects
Phase Composition and Phase Stability of a High-Chromium Nickel-Based Superalloy, IN939. 1771-1783A

Phase structure
See Solid phases

Phase transformations
See also Allotropic transformation
Austenitizing
Martensitic transformations
A Fundamental Study of Laser Transformation Hardening. 643-653A
Austenitization of Steel During Chip Formation. 1743-1745A

Phase transformations, Cooling effects
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A
Kinetics of Austenite—Pearlite Transformation in Eutectoid Carbon Steel. 1803-1815A

Phase transformations, Radiation effects
Effects of X-Ray Irradiation on Hydrogen-Induced Phase Transformations in Stainless Steel. 151-152A

Phases (state of matter)
See also Laves phase
Sigma phase
Solid phases
Vapor phases
Investigation of the Early Stages of Deformation of Two-Phase Copper—Aluminum Alloys. 2407-2413A

Phases (state of matter), Chemical analysis
Phase Composition and Phase Stability of a High-Chromium Nickel-Based Superalloy, IN939. 1771-1783A

Phases (state of matter), Cooling effects
Microstructural Development in Complex Nickel—Aluminum Bronzes. 1951-1956A

Phosphorus, Alloying additive
Effect of Solutes on Lüders Strain in Low-Carbon Sheet Steels. 85-91A
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A

Phosphorus, Diffusion
Influence of Sulfur, Phosphorus and Antimony Segregation on the Intergranular Hydrogen Embrittlement of Nickel. 223-232A
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A
Anisotropic Embrittlement in High-Hardness ESR 4340 Steel Forgings. 1661-1669A

Phosphorus, Impurities
Solute Segregation and Hydrogen-Induced Intergranular Fracture in an Alloy Steel. 903-911A
The Evaluation of Tempered Martensite Embrittlement in 4130 Steel by Instrumented Charpy V-Notch Testing. 1109-1119A
The Micromechanisms of Tempered Martensite Embrittlement in 4340-Type Steels. 1313-1325A
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Photo oxidation
See Oxidation

Photodecomposition
See Decomposition reactions

Physical properties
See Anisotropy
Boiling points
Coercive force
Cryogenic properties
Density
Diffusivity
Heat of formation
Permeability
Resistivity
Solid solubility
Solubility
Texture
Vapor pressure

Piles (nuclear)
See Nuclear reactors

Pipe, Welding
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A

Plaster of Paris
See Calcium compounds

Plastic deformation
On the Determination of Hill's Plastic Strain Ratio. 2566-2567A

Plastic flow
Determination of Lüders Strains and Flow Properties in Steels From Hardness/Microhardness Tests. 1607-1613A
Plastic Flow Phenomenology of 304L Stainless Steel. 1681-1695A

Plastic strain
See Plastic deformation

Plasticity
See also Superplasticity
Some Surprising Features of the Plastic Deformation of Body-Centered Cubic Metals and Alloys. 1237-1256A

Plasticity, Anisotropy
Stretch Forming and Fracture of Strongly Textured Ti Alloy Sheets. 1343-1348A

Plasticity, Diffusion effects
The Effect of Hydrogen on the Multiaxial Stress—Strain Behavior of Titanium Tubing. 2527-2533A

Plasticity, Microstructural effects
Deformation and Fracture of Strongly Textured Titanium Alloy Sheets in Uniaxial Tension. 1333-1342A

Platinum metal alloys
See Palladium base alloys

Platinum metal compounds
See Palladium compounds

Platinum metals
See Palladium

Point defects
See Interstitial impurities
Lattice vacancies

Polarization (electrodes)
Cobalt Extraction in Ammoniacal Solution: Electrochemical Effect of Metallic Iron. 571-576B

Pollutants
See Contaminants

Pollution
See Air pollution

Pollution abatement
Kinetics and Sulfur Fixation in the Reduction or Oxidation of Metal Sulfides Mixed With Lime. 175-180B
The Carbothermal Reduction of Nickel Sulfide in the Presence of Lime. 605-615B

Portevin-Le Chatelier effect
See Serrated yielding

Pots (electrolytic)
See Electrolytic cells

Powder compacts, Corrosion
Enhanced Stress Corrosion Resistance From Steels Having a Dual-Phase Austenite—Martensite Microstructure. 1921-1928A

Powder compacts, Extrusion
Laboratory Extrusion of Nb_3Sn. 2295-2299A

Powder compacts, Mechanical properties
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A
Segregation to Interphase Boundaries in Liquid-Phase Sintered Tungsten Alloys. 667-677A
Microstructures and Mechanical Properties of Hot Isostatically Pressed Powder Metallurgy Alloy APK-1. 733-742A
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A
Wear Debris Due to Mode II Opening of Mode I Fatigue Cracks in an Aluminum Alloy. 1227-1230A
Flow Localization Accompanying the Intergranular Fracture of Ni_3Al. 1523-1524A
Fatigue Crack Growth Rate of Ti—6Al—4V Prealloyed Powder Compacts. 1524-1528A
Creep Deformation of TiAl and TiAl + W Alloys. 2170-2174A
The Effect of Microstructure on 650°C Fatigue Crack Growth in P/M Astroloy. 2301-2308A

Powder compacts, Microstructure
Deformation Behavior of Blended Elemental Ti—6Al—4V Compacts. 761-769A

Powder metallurgy
See Sintering (powder metallurgy)

Powder metallurgy parts, Coating
Anodic Coating Behavior of X7091 Aluminum P/M Alloy. 2182-2184A

Powder metallurgy parts, Mechanical properties
Fatigue Crack Initiation and Microcrack Propagation in X7091 Type Aluminum P/M Alloys. 1189-1197A
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A
Effects of Second-Phase Dispersoids on Deformation Behavior of Al—Li Alloys. 2174-2177A
Influence of Thermomechanical Processing on Low-Cycle Fatigue of Prealloyed Ti—6Al—4V Powder Compacts. 2497-2505A

Powder technology
See Sintering (powder metallurgy)

Powders
See also Metal powders
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B

Precious metal alloys
See Palladium base alloys

Precious metal compounds
See Palladium compounds

Precious metals
See also Palladium
Silver

Precious metals, Recovering
Vaporization Studies of Calcium Arsenate Under Neutral Conditions and in Contact With Copper Pyrometallurgical Slags. 171-174B

Precipitate free zone
Discontinuous Gamma Prime Coarsening in a Ni—Al—Mo Base Superalloy. 1283-1292A
Further Observations on the Formation Mechanisms of Precipitate-Free Zones in an Aged Al—16 Wt.-% Ag Alloy. 1745-1747A
An AEM Investigation of the Formation of Precipitate-Free Zones in an Al—16 Wt.-% Ag Alloy—Determination of Equilibrium and Metastable Solvus Lines. 1825-1831A

Precipitates
Precipitation in CF-8M Duplex Stainless Steel Welds. 37-44A
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A
The Influence of the $M_{23}(C,N)_6$ Compound on the Mechanical Properties of Type 422 Stainless Steel. 1395-1408A
A TEM Study of Microstructural Changes During Retrogression and Reaging in 7075 Aluminum. 1843-1850A
Elastic Interaction of Two Precipitates Subjected to an Applied Stress Field. 2219-2227A

Precipitates, Chemical analysis
Phase Composition and Phase Stability of a High-Chromium Nickel-Based Superalloy, IN939. 1771-1783A
STEM-EDS X-Ray Microanalysis of Small Precipitates in Iron-Base Thin Foils. 1943-1949A

Precipitates, Composition effects
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A

Precipitates, Crystal growth
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A
Irradiation Induced Precipitation in Tungsten-Based W—Re Alloys. 655-666A
Development and Application of Growth Models for Grain Boundary Allotriomorphs of a Stoichiometric Compound in Ternary Systems. 1261-1269A

Precipitates, Crystal lattices
Crystallographic Study of the Tempering of Martensitic Carbon Steel by Electron Microscopy and Diffraction. 1025-1031A
Precipitation Reactions During the Heat Treatment of Ferritic Steels. 1047-1055A
Microstructures of the Commercial 7075 Al Alloy in the T651 and T7 Tempers. 1957-1965A

Precipitates, Heating effects
Effects of Microstructure on Fracture Toughness of a High-Strength Low-Alloy Steel. 2055-2061A

Precipitation
See also Intergranular precipitation
Factors Affecting Alkali Jarosite Precipitation. 531-539B
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A
Influence of Interfacial Structure Upon Carbide Precipitation at Austenite:Ferrite Boundaries in an Fe—C—Mo Alloy. 1159-1167A

Precipitation, Heating effects
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A

Precipitation hardening
See also Aging (artificial)
Strain aging
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A
Precipitation Reactions During the Heat Treatment of Ferritic Steels. 1047-1055A
Discontinuous Gamma Prime Coarsening in a Ni—Al—Mo Base Superalloy. 1283-1292A
Cyclic Creep and Stress Rupture of a Mechanically Alloyed Oxide Dispersion and Precipitation Strengthened Nickel-Base Superalloy. 1435-1441A
A Study of a Cellular Phase Transformation in the Ternary Ni—Al—Mo Alloy System. 1561-1571A
Further Observations on the Formation Mechanisms of Precipitate-Free Zones in an Aged Al—16 Wt.-% Ag Alloy. 1745-1747A
Weld Microstructure of (Ni, Fe)$_3$(V,Ti) Long-Range-Ordered Alloy. 1785-1791A
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A

Precipitation hardening alloys, Mechanical properties
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A

Precipitation hardening steels
See Maraging steels

Precipitation heat treatment
See Aging (artificial)
Overaging
Precipitation hardening

Preferential attack (corrosion)
See Intergranular corrosion

Pregnant liquors
Oxidation of Ferrous Sulfate in Weakly Acidic Solution by Gas Bubbling. 17-24B

Pressing
See Hot isostatic pressing
Isostatic pressing

Pressure
See Hydrostatic pressure
Partial pressure
Vacuum
Vapor pressure

Pressure vessels
Fractographic Observations of Cleavage Initiation in the Ductile-Brittle Transition Region of a Reactor-Pressure-Vessel Steel. 1934-1937A
A Local Criterion for Cleavage Fracture of a Nuclear Pressure Vessel Steel. 2277-2287A

Pressure vessels, Service life
Restoration of Elevated Temperature Tensile Strength in 2.25Cr—1Mo Steel. 845-855A

Prestressing steels, Mechanical properties
Effect of Prestrain on the Mechanical Properties of Eutectoid Steel. 1379-1388A

Probes, Design
Determination of the Sodium Activity in Aluminum and Aluminum—Silicon Alloys Using Sodium Beta Alumina. 435-440B

Propagation
See Crack propagation

Properzi process
See Continuous casting

Protective atmospheres
See Controlled atmospheres

Pyrolysis
Insoluble Surface Carbon on Steel Sheet Annealed in Hydrogen—Nitrogen Atmosphere. 369-373B

Pyrrhotite, Reactions (chemical)
A Solid-State E.M.F. Study of the Pyrrhotite—Magnetite Equilibrium in the Temperature Interval 850 to 1275K. 459-464B

Quantitative metallography
Quantitative Geometric Characterization of High-Carbon Martensite. 163-173A

Quaternary systems
The Analysis and Calculation of Equilibria in Complex Metallurgical Systems. 701-710B

Quenching (cooling)
See also Rapid solidification
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A

Quenching stresses
See Residual stress

Radiant heating
See Laser beam heating

Radiation damage
Irradiation Induced Precipitation in Tungsten-Based W—Re Alloys. 655-666A

Radiocrystallography
See Crystallography

Rail steels, Mechanical properties
Roughness-Induced Crack Closure: An Explanation for Microstructurally Sensitive Fatigue Crack Growth. 421-433A
Effect of Prestrain on the Mechanical Properties of Eutectoid Steel. 1379-1388A

Rapid solidification
Analysis of *In Situ* Rapid Solidification of Submicron Al—Ge Eutectic Powders Using Transmission Electron Microscopy. 623-633A
X-Ray Diffraction Study on the Structure of Rapidly Solidified Fe—Al—C and Fe(Mn,Ni)—Al—C Alloys. 973-975A
Microstructure and Mechanical Properties of Rapidly Quenched $L1_2$ Alloys in Ni—Al—X Systems. 1367-1377A
Flow Localization Accompanying the Intergranular Fracture of Ni_3Al. 1523-1524A
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A
Microstructural Modification of Austenitic Stainless Steels by Rapid Solidification. 1833-1841A
The Microstructure of Rapidly Solidified Beta-Phase Cu—Zn—Al Alloys. 2229-2234A

Rare earth metals
See Cerium
Europium
Gadolinium
Lanthanum

Rare gases
See Helium

Reaction kinetics
Oxidation of Ferrous Sulfate in Weakly Acidic Solution by Gas Bubbling. 17-24B
Leaching Kinetics of Malachite in Ammonium Carbonate Solutions. 33-40B
Modeling of Noncatalytic Fluid—Solid Reactions: the Quasisteady State Assumption. 49-53B
Kinetics of the F, F_2/Gd(s,v) Reactions. 53-60A
The Oxidation-Reduction Kinetics of Palladium Powder. 95-99B
A Study of the Mechanism of Reduction With Hydrogen of Pure Wüstite Single Crystals. 125-132B
Chemical Equilibrium Studies on the Copper—Sulfuric Acid—Kelex 100—Xylene System. 153-158B
The Rates of Desulfurization of Liquid Iron by Solid CaO and CaO-Saturated Liquid Iron Oxide at 1600°C. 259-266B
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions With Liquid Silver at 1283K and a Liquid Silicate at 1373K. 267-272B
A Kinetic Model of UO_2 Dissolution in Acid, H_2O_2 Solutions That Includes Uranium Peroxide Hydrate Precipitation. 325-334B
Acid Dissolution of Willemite ($(Zn,Mn)_2SiO_4$) and Hemimorphite ($Zn_4Si_2O_7(OH)_2H_2O$). 335-346B

Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N—^{14}N$ Isotope Exchange Reaction. 441-449B
On the Interfacial Kinetics of the Reaction of CO_2 With Liquid Iron. 504-506B
Cupric Chloride Leaching of Model Sulfur Compounds for Simple Copper Ore Concentrates. 559-570B
The Dynamic Oxidation of Aluminum and Its Alloys. 625-631B
The Sulfidation/Oxidation of Armco Iron-Based Superalloys Between 1023 and 1373K. 657-665B
Interfacial Effects in Gaseous Reduction of $PbO.SiO_2$ Melts. 693-700B
Kinetics of Reduction of Hematite With Hydrogen Gas at Modest Temperatures. 711-723B
Rate Processes and Structural Changes in Gaseous Reduction of Hematite Particles to Magnetite. 743-752B

Reaction sintering
See Activated sintering

Reactions (chemical)
See also Aluminothermic reactions
Carbothermic reactions
Chlorination
Decomposition reactions
Desulfurizing
Hydrogen reduction
Hydrogenation
Interface reactions
Oxidation
Pyrolysis
Leaching of Bornite in Acidified Ferric Chloride Solutions. 577-588B
The Decomposition of Wustite Under Mixed Chemical Reactions/Mass Transport Limitations. 753-759B

Reactivity (chemical)
See Activity (chemical)

Reactor vessels (nuclear)
See Nuclear reactors

Reactors
See Gas cooled reactors
Nuclear reactors

Receptacles (containers)
See Containers

Reclamation
See Recycling

Recovering
See Recycling
Sulfur dioxide recovery

Recovery
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A
A TEM Study of Microstructural Changes During Retrogression and Reaging in 7075 Aluminum. 1843-1850A

Recovery, Alloying effects
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

Recrystallization
Orientation Distribution Function Analysis of the Recrystallization Texture in a Boron-Treated Deep-Drawing Steel. 11-15A
Influence of Interfacial Structure Upon Carbide Precipitation at Austenite:Ferrite Boundaries in an Fe—C—Mo Alloy. 1159-1167A

Recrystallization, Alloying effects
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

Rectification (distillation)
See Distillation

Recycling
Oxidation of Ferrous Sulfate in Weakly Acidic Solution by Gas Bubbling. 17-24B
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A
Nickel-Base Superalloys: Physical Metallurgy of Recycling. 329-341A
Effect of Recycling on Residuals, Processing and Properties of Carbon and Low-Alloy Steels. 343-353A

Red hardness
See Hardness

Red mud
Ferrovanadium From a Secondary Source of Vanadium. 133-135B

Red shortness
See Brittleness

Redox potential
See Electrode potentials

Reducing agents
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. I.—Effect of Some Operational Variables. 375-381B

Reduction (chemical)
See also Direct reduction
Hydrogen reduction
Reactions of Sinter in a Lead Blast Furnace. 617-623B
Interfacial Effects in Gaseous Reduction of $PbO.SiO_2$ Melts. 693-700B
Rate Processes and Structural Changes in Gaseous Reduction of Hematite Particles to Magnetite. 743-752B

Reduction (electrolytic)
See Electrowinning
Hall Heroult process

Reduction (metal working)
See Deep drawing
Hot rolling
Wire drawing

Reduction potential
See Electrode potentials

Refining
See Electrorefining
Electroslag refining

Refractory alloys
See Molybdenum base alloys
Niobium base alloys
Tantalum base alloys
Tungsten base alloys
Vanadium base alloys

Refractory metal compounds
See Molybdenum compounds
Niobium compounds
Tungsten carbide
Vanadium compounds

Refractory metals
See also Chromium
Molybdenum
Niobium
Tantalum
Tungsten
Vanadium

Refractory metals, Mechanical properties
Some Surprising Features of the Plastic Deformation of *Body-Centered Cubic Metals and Alloys.* 1237-1256A

Regulations
Atlas Never Shrugged. 519B
Atlas Never Shrugged. 2199-2208A

Remelting
See Melting

Residual stress
Effect of Gradients in Multiaxial Stress States on Residual Stress Measurements With X-Rays. 249-258A
The Development of Nitrogen Concentration Profiles on Nitriding Iron. 395-399A
Equilibrium Conditions for the Average Stresses Measured by X-Rays. 1907-1914A
Elastic—Plastic Analysis of Indentation Damages in Copper: Work-Hardening and Residual Stress.—I. 2415-2421A

Residual stress, Heating effects
Tempering of Manganese and Mn—Si—V Dual-Phase Steels. 1079-1087A

Resistance welds
See Welded joints

Resistivity
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A

Resistivity, Radiation effects
Irradiation Induced Precipitation in Tungsten-Based W—Re *Alloys.* 655-666A

Resistometric analysis
See Conductiometric analysis

Retained austenite
Retained Austenite and Tempered Martensite Embrittlement *in Medium-Carbon Steels.* 1121-1133A
Role of Retained Austenite on the Deformation of an Fe— 0.07C—1.8Mn—1.4Si Dual-Phase Steel. 1497-1504A
The Effects of Heat Treatment on Fracture Toughness and *Fatigue Crack Growth Rates in 440C and BG42 Steels.* 1899-1906A

Retained austenite, Deformation effects
The Mechanical Stability of Austenite in Maraging Steels. 801-808A

Retained austenite, Heating effects
Tempered Martensite Embrittlement in Fe—Mo—C and Fe—W—C Steel. 1389-1394A

Revaporization
See Vaporizing

Reviews
Some Surprising Features of the Plastic Deformation of Body-Centered Cubic Metals and Alloys. 1237-1256A

Ribbons (metallic)
See Tapes (metallic)

Roasting
Kinetics and Sulfur Fixation in the Reduction or Oxidation of Metal Sulfides Mixed With Lime. 175-180B
Experimental Study of Transverse Bed Motion in Rotary *Kilns.* 191-205B
The Modeling of Transverse Solids Motion in Rotary Kilns. 207-219B
Thermodynamics of Roasting Arsenopyrite. 239-251B
Oxidation Aspects of the Lime-Concentrate-Pellet Roasting *Process.* 589-604B

Rolling
See Controlled rolling
Hot rolling

Rolling texture
Deformation and Fracture of Strongly Textured Titanium *Alloy Sheets in Uniaxial Tension.* 1333-1342A
Stretch Forming and Fracture of Strongly Textured Ti Alloy Sheets. 1343-1348A

Texture-Induced Cleavage Delamination of Warm Rolled Low-Carbon Steel. 2563-2566A

Rotary furnaces
Experimental Study of Transverse Bed Motion in Rotary Kilns. 191-205B
The Modeling of Transverse Solids Motion in Rotary Kilns. 207-219B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. I.—Effect of Some Operational Variables. 375-381B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. II.—Effect of Kiln Geometry. 383-392B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. III.—Effect of Ring Formation Within the Kiln. 393-399B
Heat Transfer From Flames in a Rotary Kiln. 411-424B

Rotary induction furnaces
See Electric induction furnaces

Rotors
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A

Rotors, Corrosion
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Roughing (rolling)
See Hot rolling

Roughness
Effect of Fracture Surface Roughness on Growth of Short Fatigue Cracks. 153-155A

Roundness
See Shape

Rupture strength
See Creep rupture strength

S N diagrams
S—N Curve Inversion of a Nickel-Base Superalloy at Elevated Temperature. 727-731A

Salt (sodium chloride)
See Sodium chloride

Salt water
See Sea water

Sandwich construction
The Mechanical Properties of Cellular Solids. 1755-1769A

Sap process
See Dispersion hardening

Scale (corrosion)
Simultaneous Creep and Oxidation of an Fe—1 Wt.-% Al Alloy at 973 to 1073K. 1207-1211A
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A
Oxide Scale Induced Cleavage Fracture in an ODS Fe—Cr—Al Alloy. 1516-1518A

Scale (corrosion), Crystal growth
The Effects of Cerium Additions on the High-Temperature Corrosion Behavior of Fe—30Cr—5Al Alloy in 80% Na_2SO_4—20% NaCl Molten Salt. 2131-2142A

Scale (corrosion), Crystal lattices
Structure of Transient Oxides Formed on NiCrAl Alloys. 2143-2161A

Scanning electron microscopy
STEM-EDS X-Ray Microanalysis of Small Precipitates in Iron-Base Thin Foils. 1943-1949A
Low-Temperature Diffusivity Measurements in the FeNi System Using STEM Techniques. 2437-2439A

Schottky defect
See Lattice vacancies

Scrap
See Metal scrap

Scrap metal
See Metal scrap

Screw dislocations
Characteristics of Lath Martensite. II.—The Martensite/Austenite Interface. 823-834A

Sea water, Environment
The Effect of Loading Mode on the Stress Corrosion Cracking of Aluminum Alloy 5083. 925-930A

Season cracking
See Stress corrosion cracking

Seeding
See Nucleation

Segregations
Influence of Sulfur, Phosphorus and Antimony Segregation on the Intergranular Hydrogen Embrittlement of Nickel. 223-232A
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A
Slag Movement in ESR of Steel. 761-764B
Grain Boundary Segregation in Nickel and Binary Nickel Alloys Doped With Sulfur. 865-870A
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A
Phase Composition and Phase Stability of a High-Chromium Nickel-Based Superalloy, IN939. 1771-1783A
A Study of the Chemical Composition of Grain Boundaries and Creep Cavity Surfaces in a Cu—Sb Alloy. 2447-2454A

Segregations, Heating effects
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A

Segregations, Stress effects
The Tensile Properties of an Fe—4%Mo—0.2%C Martensite Tempered Under Applied Stress. 1067-1077A

Selenium, Phases (state of matter)
Composition of Liquid-Saturated Selenium Vapor. 308-311B

Self diffusion
See Diffusion

Semicontinuous casting
See Continuous casting

Sensitizing
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A
Sensitization of 12 Wt.-% Chromium, Titanium-Stabilized Ferritic Stainless Steel. 1721-1728A

Separation
See Isotope separation

Separators
See Ion exchangers

Serrated yielding
On the Portevin—Le Chatelier Effect Due to Snoek Strain Aging in the Niobium—Oxygen System. 483-489A

Serrated yielding, Heating effects
Tempering of Manganese and Mn—Si—V Dual-Phase Steels. 1079-1087A

Shape
The Conditions for the Formation of Lath and Porous Magnetite on Reduction of Hematite in H_2/H_2O Gas Mixtures. 513-514B

Shape memory
Martensitic Transformation Cycling Effects in Cu—Zn—Al Shape Memory Alloys. 33-36A

Shear properties
See Shear strength
Shear stress

Shear strength
On the Deformation of Flow Properties From Compression Tests. 155-156A
Some Surprising Features of the Plastic Deformation of Body-Centered Cubic Metals and Alloys. 1237-1256A

Shear strength, Microstructural effects
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A

Shear stress
The Occurrence of Shear Bands in Nonisothermal, Hot Forging of Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 105-115A

Sheet metal
Evaluating Hardening Laws at Large Tensile Strains in Sheet Specimens. 2269-2275A

Sheet metal, Mechanical properties
On the R-Value Measurements. 1199-1205A

Sheet metal, Metal working
Stretch Forming and Fracture of Strongly Textured Ti Alloy Sheets. 1343-1348A

Sheet steel
See Strip steel

Shielded arc welding
See Gas tungsten arc welding
Submerged arc welding

Shock resistance
Consideration of Yttria for Vacuum Induction Melting of Titanium. 497-499B

Shot blasting
See Shot peening

Shot peening
Equilibrium Conditions for the Average Stresses Measured by X-Rays. 1907-1914A

Shrinkage
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A

Sigma phase, Crystal growth
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A
The Kinetics of Sigma-Phase Precipitation in AISI 310 and AISI 316 Steels. 635-641A
Intermetallic Phase Formation in 25Cr—3Mo—4Ni Ferritic Stainless Steel. 791-800A

Silicates, Reactions (chemical)
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions With Liquid Silver at 1283K and a Liquid Silicate at 1373K. 267-272B

Silicates, Reduction (chemical)
Interfacial Effects in Gaseous Reduction of $PbO.SiO_2$ Melts. 693-700B

Silicates, Solubility
The Thermodynamic Activity of ZnO in Silicate Melts. 725-731B

Silicon, Alloying additive
Effect of Solutes on Lüders Strain in Low-Carbon Sheet Steels. 85-91A
Effect of Silicon on the Solubility Product of Vanadium Carbide in Austenite and on Other Phase Equilibria in Fe—V—Si—C Alloys at 993°C. 307-308A
Hydrogen-Induced Cracking in 4340-Type Steel: Effects of Composition, Yield Strength and Hydrogen Pressure. 881-888A
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A

Silicon, Reactions (chemical)
Phase Equilibria and Kinetics in the Solid-State Reaction Between Silicon and NiCrAl. 1549-1560A
A Mass Spectroscopy Study of Palladium Silicide Formation. 2557-2558A

Silicon carbide, Composite materials
Chemistry and Distribution of Phases Produced by Solid State SiC/NiCrAl Reaction. 781-790A

Silicon carbide, Reactions (chemical)
Solid-State SiC/Ni Alloy Reaction. 355-364A

Silicon compounds
See Silicon carbide

Silicon iron
See Silicon steels

Silicon steels, Mechanical properties
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A

Silver, Alloying elements
An AEM Investigation of the Formation of Precipitate-Free Zones in an Al—16 Wt.-% Ag Alloy—Determination of Equilibrium and Metastable Solvus Lines. 1825-1831A

Silver, Binary systems
A Correlation of the Thermodynamic Properties and Phase Diagram of the System Lead—Silver Using a Gaussian Plus Subregular Formalism. 1707-1712A

Silver, Extraction
The Fluidized Bed Electrowinning of Silver. 353-357B

Silver, Reactions (chemical)
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions With Liquid Silver at 1283K and a Liquid Silicate at 1373K. 267-272B

Simulation
See Computer simulation

Single crystals, Mechanical properties
X-Ray Diffraction Study of Subgrain Misorientation During High-Temperature Creep of Tin Single Crystals. 117-126A

Sinter (material), Reactions (chemical)
Reactions of Sinter in a Lead Blast Furnace. 617-623B

Sintered metal
See Powder metallurgy parts

Sintering
See also Sintering (powder metallurgy)
The Sintering of Creep-Induced Cavities in a Low-Alloy Ferritic Steel (*1Cr1Mo0.75V*). 679-686A

Sintering (powder metallurgy)
See also Activated sintering
Liquid phase sintering
The Oxidation-Reduction Kinetics of Palladium Powder. 95-99B
Deformation Behavior of Blended Elemental Ti—6Al—4V Compacts. 761-769A

Size distribution (particle)
See Particle size distribution

Slags
See also Blast furnace slags
Vaporization Studies of Calcium Arsenate Under Neutral *Conditions and in Contact With Copper Pyrometallurgical* Slags. 171-174B
Slag Movement in ESR of Steel. 761-764B
The Correlation of the Thermodynamic Properties of Wustite by a Gaussian-Based Formalism. 771-775A

Slags, Reactions (chemical)
The Rates of Desulfurization of Liquid Iron by Solid CaO and CaO-Saturated Liquid Iron Oxide at 1600°C. 259-266B

Slags, Reduction (chemical)
Interfacial Effects in Gaseous Reduction of $PbO.SiO_2$ Melts. 693-700B

Slags, Solubility
A Thermodynamic Study of Silica-Saturated Iron Silicate Slags in Equilibrium With Liquid Copper. 101-104B

Slags, Thermal properties
The Effect of TiO_2 Additions and Oxygen Potential on Liquidus Temperatures of Some CaO—Al_2O_3 Melts. 685-692B

Smelting
Atlas Never Shrugged. 519B
Atlas Never Shrugged. 2199-2208A

Snoek effect
On the Portevin—Le Chatelier Effect Due to Snoek Strain Aging in the Niobium—Oxygen System. 463-469A

Sodium, Chemical analysis
Determination of the Sodium Activity in Aluminum and Aluminum—Silicon Alloys Using Sodium Beta Alumina. 435-440B

Sodium chloride, Environment
Enhanced Stress Corrosion Resistance From Steels Having a Dual-Phase Austenite—Martensite Microstructure. 1921-1928A
Hydrogen-Induced Cracking in a Low-Alloy Steel. 2347-2356A

Sodium compounds
See also Sodium chloride
Sodium hydroxide

Sodium compounds, Reactions (chemical)
Thermochemistry of Na_2O—WO_3 System at 1065 to 1239K. 1713-1720A

Sodium hydroxide, Environment
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Soft annealing
See Annealing

Softening
See Overaging

Solar collectors, Materials selection
Determination of Fatigue Crack Growth in Incoloy Alloy 800 in Molten Nitrate Salt. 314-317A

Solid phases
Orientation Relationships Between B.C.C. Molybdenum and F.C.C. Gamma in a Nickel—Aluminum—Molybdenum—Tungsten Superalloy. 493-498A

Solid solubility
An AEM Investigation of the Formation of Precipitate-Free Zones in an Al—16 Wt.-% Ag Alloy—Determination of *Equilibrium and Metastable Solvus Lines.* 1825-1831A

Solid solutions
See also Interstitial solutions

Solid solutions, Diffusion
Ternary Diffusion: the ($^2\tilde{D}$) Matrix of an Ideal Solid Solution. 45-51A

Solidification
See also Directional solidification
Rapid solidification
STEM Analysis of Primary Austenite Solidified Stainless *Steel Welds.* 23-31A
Fluid Flow Into a Dendritic Array Under Forced Convection. 733-741B
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A
Heat Flow Model for Surface Melting and Solidification of an Alloy. 1169-1177A
Three-Dimensional Heat Flow and Solidification During the *Autogenous GTA Welding of Aluminum Plates.* 2245-2253A

Solidification, Cooling effects
Effect of Solidification Conditions on the Solidification Mode *in Austenitic Stainless Steels.* 191-197A

Solids flow
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. I.—Effect of Some Operational Variables. 375-381B
Flow of Materials in Rotary Kilns Used for Sponge Iron Manufacture. II.—Effect of Kiln Geometry. 383-392B
*Flow of Materials in Rotary Kilns Used for Sponge Iron Manu*facture. III.—Effect of Ring Formation Within the Kiln. 393-399B

Solubility
See also Solid solubility
A Thermodynamic Study of Silica-Saturated Iron Silicate Slags in Equilibrium With Liquid Copper. 101-104B
*Diffusivity and Solubility of Oxygen in Solid Copper Using Po*tentiostatic and Potentiometric Techniques. 673-677B
The Solubility of the Liquid Oxysulfide Phase in Liquid Fe—O—S Alloys. 679-683B
Hydrogen Traps, Repellers and Obstacles in Steel. Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A
The Thermodynamic Properties and Phase Diagram of the Zinc—Lead System. 2211-2218A
Ion-Beam Profiling of ^3He in Tritium-Exposed Type 304L and Type 21-6-9 Stainless Steels. 2261-2267A

Solubility, Alloying effects
Effect of Silicon on the Solubility Product of Vanadium Carbide in Austenite and on Other Phase Equilibria in Fe—V—Si—C Alloys at 993°C. 307-308A

Solutes, Diffusion
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A
The Effects of Segregation on the Kinetics of Intergranular Cavity Growth Under Creep Conditions. 563-570A

Solvent extraction
Statistical Modeling of Solvent Extraction Equilibria: Extraction of Copper From Sulfuric Acid and Ammoniacal Solutions by Mixtures of LIX 64N and SME 529. 159-170B
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B

Solvents, Materials selection
Thermodynamic Activity of Magnesium in Several Highly-Solvating Liquid Alloys. 451-458B

Solvus (metallurgical)
See Solid solubility

Sorption
See Absorption (material)
Desorption

Spark erosion machining
See Electric discharge machining

Spark machining
See Electric discharge machining

Specific density
See Density

Specific gravity
See Density

Specific resistance
See Resistivity

Specific volume
See Density

Specific weight
See Density

Spectroscopy
See Mass spectroscopy
X ray spectroscopy

Spelter
See Zinc

Sphericity
See Shape

Stability
See Phase stability

Stainless steels
See also Austenitic stainless steels
Ferritic stainless steels
Martensitic stainless steels

Stainless steels, Alloy development
Discussion of an Examination of Chromium Substitution in Stainless Steels (and Author's Reply). 2185-2187A

Stainless steels, Mechanical properties
Influence of Nonsteady State Behavior on Superplastic Deformation of a 25.7Cr—6.6Ni Stainless Steel. 1875-1882A

Stamping
Plastic Behavior of Aluminum-Killed Steel Following Plane-Strain Deformation. 1487-1495A

Static fatigue
See Creep rupture strength

Static pressure
See Hydrostatic pressure

Static tests
See Hardness tests

Statistical analysis
Analyzing Statistical Variability of Fracture Properties. 687-693A
Grain Growth in Samples of Aluminum Containing Alumina Particles. 2235-2243A

Steam, Environment
Direct Measurement of the Gas Content of Blisters Formed by Hydrogen Attack During Steam Corrosion in a Low-Alloy Steel. 2187-2189A

Steam turbines
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Steel alloys
See Alloy steels

Steel constituents
See Austenite
Bainite
Cementite
Ferrite
Martensite
Retained austenite

Steel making
See also Electric furnace steel making
Fluid Dynamics and Mass Transfer in Submerged Gas-Particle Jets. 425-434B
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N—^{14}N$ Isotope Exchange Reaction. 441-449B

Steels
See also Alloy steels
Aluminum killed steels
Austenitic stainless steels
Bearing steels
Boron steels
Carbon steels
Chromium molybdenum steels
Chromium molybdenum vanadium steels
Chromium vanadium steels
Dual phase steels
Ferritic stainless steels
Galvanized steels
High speed tool steels
High strength low alloy steels
High strength steels
Low alloy steels
Manganese steels
Maraging steels
Martensitic stainless steels
Molybdenum steels
Nickel chromium molybdenum steels
Nickel chromium steels
Nickel molybdenum steels
Nickel steels
Prestressing steels
Rail steels
Silicon steels
Stainless steels
Tool steels
Tungsten steels
Vanadium steels

Steels, Crystal lattices
Hydrogen Traps, Repellers and Obstacles in Steel. Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A

Steels, Diffusion
Kinetic Enrichment of Hydrogen at Interfaces and Voids by Dislocation Sweep-In of Hydrogen. 385-393A

Steels, Mechanical properties
Effect of Gradients in Multiaxial Stress States on Residual Stress Measurements With X-Rays. 249-258A

Steels, Melting
An Improved Mathematical Model for Melt Flow in Induction Furnaces and Comparison With Experimental Data. 306-308B

Stirring
See Electromagnetic stirring

Strain aging
On the Portevin—Le Chatelier Effect Due to Snoek Strain Aging in the Niobium—Oxygen System. 463-469A
Strain Aging of Ti-6242 at Hot Working Temperatures. 1512-1516A

Strain hardening
See also Shot peening
The Evaluation of Tempered Martensite Embrittlement in 4130 Steel by Instrumented Charpy V-Notch Testing. 1109-1119A
Plastic Behavior of Aluminum-Killed Steel Following Plane-Strain Deformation. 1487-1495A
Role of Retained Austenite on the Deformation of an Fe—0.07C—1.8Mn—1.4Si Dual-Phase Steel. 1497-1504A
On the Strain Dependence of Plastic-Strain Ratio of Deep Drawing Sheet Steels. 1521-1523A
Evaluating Hardening Laws at Large Tensile Strains in Sheet Specimens. 2269-2275A
Investigation of the Early Stages of Deformation of Two-Phase Copper—Aluminum Alloys. 2407-2413A
Elastic—Plastic Analysis of Indentation Damages in Copper: Work-Hardening and Residual Stress.—I. 2415-2421A

Strain rate
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A
Development of Forming Limits for Superplastic Formed Fine-Grain 7475 Al. 1593-1598A
Influence of Nonsteady State Behavior on Superplastic Deformation of a 25.7Cr—6.6Ni Stainless Steel. 1875-1882A
Failure Behavior of 304L Stainless Steel in Torsion. 2091-2099A
Operant Strain-Rate Sensitivity During Tensile Necking. 2395-2406A

Strategic materials
Discussion of an Examination of Chromium Substitution in Stainless Steels (and Author's Reply). 2185-2187A

Strength of materials
See Mechanical properties

Stress aging
See Strain aging

Stress analysis
See X ray stress analysis

Stress concentration
Elastic Interaction of Two Precipitates Subjected to an Applied Stress Field. 2219-2227A
Effect of Stress Reductions on the Stress Exponent and Subgrain Size in an Al—Zn Alloy. 2309-2316A
Operant Strain-Rate Sensitivity During Tensile Necking. 2395-2406A

Stress corrosion cracking
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A
The Effect of Loading Mode on the Stress Corrosion Cracking of Aluminum Alloy 5083. 925-930A
The Influence of Crack Length on Stress Corrosion Crack Velocity. 978-983A
Enhanced Stress Corrosion Resistance From Steels Having a Dual-Phase Austenite—Martensite Microstructure. 1921-1928A
Hydrogen-Induced Cracking in a Low-Alloy Steel. 2347-2356A
The Effect of Copper Content and Microstructure on the Hydrogen Embrittlement of Al—6Zn—2Mg Alloys. 2517-2526A

Stress corrosion cracking, Composition effects
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Stress corrosion cracking, Heating effects
The Effects of Heat Treatment and Composition on the Stress Corrosion Cracking Resistance of Inconel Alloy X-750. 133-139A

Stress corrosion resistance
See Corrosion resistance

Stress distribution
See Stress concentration

Stress intensity
Fatigue Crack Propagation in Intercritically Tempered Fe—9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A
Hydrogen-Induced Cracking in a Low-Alloy Steel. 2347-2356A
Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks. 2375-2385A

Stress rupture strength
See Creep rupture strength

Stress strain curves
Plastic Constraint and Ductility in Tensile Notched Specimens of Amorphous $Pd_{79}Cu_6Si_{16}$. 709-716A
Plastic Flow Phenomenology of 304L Stainless Steel. 1681-1695A
The Cyclic Response of Dilute Iron Alloys. 2507-2515A

Stresses
See Residual stress
Shear stress
Stress intensity

Stretch forming
Stretch Forming and Fracture of Strongly Textured Ti Alloy Sheets. 1343-1348A

Stretching
See Stretch forming

Strip
See also Strip steel

Strip, Casting
A Mathematical Model of a Drum and Ring Horizontal Strip Casting Process. 487-493B

Strip steel, Crystal lattices
Orientation Distribution Function Analysis of the Recrystallization Texture in a Boron-Treated Deep-Drawing Steel. 11-15A

Strip steel, Mechanical properties
Effect of Solutes on Lüders Strain in Low-Carbon Sheet Steels. 85-91A
On the Strain Dependence of Plastic-Strain Ratio of Deep Drawing Sheet Steels. 1521-1523A

Strip steel, Structural hardening
Plastic Behavior of Aluminum-Killed Steel Following Plane-Strain Deformation. 1487-1495A

Strip steel, Surface properties
Insoluble Surface Carbon on Steel Sheet Annealed in Hydrogen—Nitrogen Atmosphere. 369-373B

Strong liquor
See Pregnant liquors

Structural hardening
See also Aging (artificial)
Precipitation hardening
Strain aging
Strain hardening
Surface hardening

Structural hardening, Alloying effects
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A

Structural steels
See Rail steels

Structures (crystalline)
See Banded structure
Crystal structure
Dendritic structure
Grain structure
Lamellar structure
Microstructure
Widmanstatten structure

Submerged arc welding
Comparison of Theoretically Predicted and Experimentally Determined Submerged Arc Weld Deposit Compositions. 510-513B

Submerged arc welds
See Welded joints

Suction
See Vacuum

Sulfates, Oxidation
Oxidation of Ferrous Sulfate in Weakly Acidic Solution by Gas Bubbling. 17-24B

Sulfates, Reactions (chemical)
A Partial Equilibrium Model to Characterize the Precipitation of Ferric Ion During the Leaching of Chalcopyrite With Ferrite Sulfate. 5-15B
Oxide—Sulfate Equilibria in the Magnesium, Nickel and Manganese Systems Measured by a Solid K_2SO_4 Concentration Cell. 117-124B

Sulfates, Reduction (chemical)
An Equilibrium Study of the Hydrogen Reduction of Copper Sulfates. 136-139B

Sulfidation (corrosion)
See Sulfurization

Sulfides
See also Hydrogen sulfide

Sulfides, Impurities
Effect of Sulfide Inclusion Morphology and Pearlite Banding on Anisotropy of Mechanical Properties in Normalized C—Mn Steels. 271-283A
Effect of Sulfides and Sulfide Morphology on Anisotropy of Tensile Ductility and Toughness of Hot Rolled C—Mn Steels. 471-484A

Sulfides, Oxidation
Oxidation of Dense Iron Sulfide. 109-116B

Sulfides, Reduction (chemical)
The Carbothermal Reduction of Nickel Sulfide in the Presence of Lime. 605-615B

Sulfides, Solubility
The Solubility of the Liquid Oxysulfide Phase in Liquid Fe—O—S Alloys. 679-683B

Sulfur, Alloying elements
Studies of the Interfacial Kinetics of the Reaction of Nitrogen With Liquid Iron by the $^{15}N—^{14}N$ Isotope Exchange Reaction. 441-449B

Sulfur, Diffusion
Influence of Sulfur, Phosphorus and Antimony Segregation on the Intergranular Hydrogen Embrittlement of Nickel. 223-232A
The Rates of Desulfurization of Liquid Iron by Solid CaO and CaO-Saturated Liquid Iron Oxide at 1600°C. 259-266B
The Effects of Trace Impurities on the Ductility of a Cr—Mo—V Steel at Elevated Temperatures. 571-580A
Grain Boundary Segregation in Nickel and Binary Nickel Alloys Doped With Sulfur. 865-870A
High-Resolution Scanning Auger Microscopic Investigation of Intergranular Fracture in As-Quenched Fe—12Mn. 913-920A
Anisotropic Embrittlement in High-Hardness ESR 4340 Steel Forgings. 1661-1669A

Sulfur, Impurities
The Micromechanisms of Tempered Martensite Embrittlement in 4340-Type Steels. 1313-1325A

Sulfur, Reactions (chemical)
Kinetics and Mechanism of the Desulfurization of Liquid Blast Furnace Slags by Ar—H_2O Gas Mixtures. 221-230B
Reaction Rates for Sulfur Fixation With Iron at 1100 to 1275K. 291-300B

Sulfur, Ternary systems
Predominance Area Diagrams of the System Co—S—O Between 583 and 1148K. 506-509B

Sulfur compounds
See Hydrogen sulfide
Sulfur dioxide

Sulfur dioxide, Reactions (chemical)
Kinetics and Sulfur Fixation in the Reduction or Oxidation of Metal Sulfides Mixed With Lime. 175-180B

Sulfur dioxide recovery
Reaction Rates for Sulfur Fixation With Iron at 1100 to 1275K. 291-300B

Sulfuric acid leaching
Statistical Modeling of Solvent Extraction Equilibria: Extraction of Copper From Sulfuric Acid and Ammoniacal Solutions by Mixtures of LIX 64N and SME 529. 159-170B

Sulfurization
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Sulfurization, Temperature effects
The Sulfidation/Oxidation of Armco Iron-Based Superalloys Between 1023 and 1373K. 657-665B

Sulphur
See Sulfur

Superalloys, Casting
Process and Structural Aspects of Melt-Spun Nickel-Base Superalloy Ribbons. 1817-1823A

Superalloys, Composite materials
Chemistry and Distribution of Phases Produced by Solid State SiC/NiCrAl Reaction. 781-790A

Superalloys, Corrosion
Corrosion Fatigue of Type 304 Stainless Steel and Inconel 600 in a Boiling (140°C) Concentrated Caustic Solution. 67-73A
The Effects of Heat Treatment and Composition on the Stress Corrosion Cracking Resistance of Inconel Alloy X-750. 133-139A
Thermochemistry of $Na_2O—WO_3$ System at 1065 to 1239K. 1713-1720A
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Superalloys, Crystal growth
Optical Observations of Unidirectional Solidification in Microgravity. 2163-2167A

Superalloys, Mechanical properties
Anelastic Relaxation Controlled Cyclic Creep and Cyclic Stress Rupture Behavior of an Oxide Dispersion-Strengthened Alloy. 241-247A
Determination of Fatigue Crack Growth in Incoloy Alloy 800 in Molten Nitrate Salt. 314-317A
High-Temperature Low-Cycle Fatigue of IN 738 and Application of Strain Range Partitioning. 449-461A
Crack and Cavity Nucleation at Interfaces During Creep. 547-561A
The Effect of Cerium on High-Temperature Tensile and Creep Behavior of a Superalloy. 611-621A
S—N Curve Inversion of a Nickel-Base Superalloy at Elevated Temperature. 727-731A
The Effects of Boron and Zirconium on the Creep and Fatigue Crack Growth Behavior of a Nickel-Base Superalloy. 895-901A
Creep/Corrosion of Two Nickel Alloys in Combustion Gas. 1213-1221A
Cyclic Creep and Stress Rupture of a Mechanically Alloyed Oxide Dispersion and Precipitation Strengthened Nickel-Base Superalloy. 1435-1441A
Creep Crack Growth Behavior of Several Structural Alloys. 1467-1480A
Oxide Scale Induced Cleavage Fracture in an ODS Fe—Cr—Al Alloy. 1516-1518A
Microfracture Model for Hydrogen Embrittlement of Austenitic Steels. 1528-1531A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A
An Investigation on the Creep and Fracture Behavior of Cast Nickel-Base Superalloy IN738LC. 2329-2335A

Superalloys, Microstructure
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A

Superalloys, Oxidation
Fatigue Oxidation Interaction in a Superalloy—Application to Life Prediction in High-Temperature Low-Cycle Fatigue. 141-149A
The Sulfidation/Oxidation of Armco Iron-Based Superalloys Between 1023 and 1373K. 657-665B

Oxidation of Carburized Hastelloy X. 1518-1521A

Superalloys, Phases (state of matter)
Orientation Relationships Between B.C.C. Molybdenum and F.C.C. Gamma in a Nickel—Aluminum—Molybdenum—Tungsten Superalloy. 493-498A

Superalloys, Powder technology
Practical Applications of Hot Isostatic Pressing Diagrams: Four Case Studies. 211-221A
Microstructures and Mechanical Properties of Hot Isostatically Pressed Powder Metallurgy Alloy APK-1. 733-742A
The Effect of Microstructure on 650°C Fatigue Crack Growth in P/M Astroloy. 2301-2308A

Superalloys, Reactions (chemical)
Solid-State SiC/Ni Alloy Reaction. 355-364A
Phase Equilibria and Kinetics in the Solid-State Reaction Between Silicon and NiCrAl. 1549-1560A

Superalloys, Recovering
Nickel-Base Superalloys: Physical Metallurgy of Recycling. 329-341A

Superalloys, Structural hardening
Discontinuous Gamma Prime Coarsening in a Ni—Al—Mo Base Superalloy. 1283-1292A

Supercooling
Supercooling and Structure of Levitation Melted Fe—Ni Alloys. 1147-1157A

Superplastic forming
Control of Superplastic Cavitation by Hydrostatic Pressure. 1583-1591A
Development of Forming Limits for Superplastic Formed Fine-Grain 7475 Al. 1593-1598A
Influence of Nonsteady State Behavior on Superplastic Deformation of a 25.7Cr—6.6Ni Stainless Steel. 1875-1882A

Superplasticity
Observations of Grain Boundary Sliding During Superplastic Deformation. 1451-1458A

Superplasticity, Alloying effects
Enhanced Superplasticity and Strength in Modified Ti—6Al—4V Alloys. 2535-2544A

Superplasticity, Pressure effects
Control of Superplastic Cavitation by Hydrostatic Pressure. 1583-1591A

Supply and demand
Atlas Never Shrugged. 519B
Atlas Never Shrugged. 2199-2208A

Surface alloying
Composition Control in Laser Surface Alloying. 181-190B

Surface chemistry
The Diffusivity of Hydrogen in Niobium-Stabilized Stainless Steel. 1869-1874A

Surface diffusion
See Diffusion

Surface finishing
See Shot peening

Surface hardening
See also Carburizing
Laser beam hardening
Nitriding
Shot peening
A Fundamental Study of Laser Transformation Hardening. 643-653A
Heat Flow During the Laser Transformation Hardening of Cylindrical Bodies. 1859-1867A

Surface layer, Stress effects
The Importance of Surface Layer on Fatigue Behavior of a Ti—6Al—4V Alloy. 127-132A

Surface properties
See Roughness
Surface structure

Surface roughness
See Roughness

Surface structure
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A
Composition Control in Laser Surface Alloying. 181-190B
Heat Flow Model for Surface Melting and Solidification of an Alloy. 1169-1177A
Observation of Local Hydrogen on Nickel Surfaces. 2440-2442A

Systems (metallurgical)
See Binary systems
Quaternary systems
Ternary systems

Tanks (electrolytic)
See Electrolytic cells

Tantalum, Diffusion
Electromigration of Hydrogen and Deuterium in Tantalum: Isotope Effect. 2255-2260A

Tantalum, Solubility
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A

Tantalum base alloys, Diffusion
Activity and Diffusivity of Oxygen in Tantalum- and Niobium-Base Alloys. 2117-2123A

Tapes (metallic), Casting
Process and Structural Aspects of Melt-Spun Nickel-Base Superalloy Ribbons. 1817-1823A

Temper brittleness
The Effects of Trace Impurities on the Ductility of a Cr—Mo—V Steel at Elevated Temperatures. 571-580A
The Evaluation of Tempered Martensite Embrittlement in 4130 Steel by Instrumented Charpy V-Notch Testing. 1109-1119A
Tempered Martensite Embrittlement in Fe—Mo—C and Fe—W—C Steel. 1389-1394A
The Effects of Heat Treatment on Fracture Toughness and Fatigue Crack Growth Rates in 440C and BG42 Steels. 1899-1906A

Temper brittleness, Alloying effects
Auger Analysis of Fractured Surfaces of Temper Embrittled 2.25Cr—1Mo Steel Containing Rare Earth Additions. 2558-2560A

Temper brittleness, Heating effects
The Effects of Tempering Reactions on Temper Embrittlement of Alloy Steels. 1101-1108A

Temper brittleness, Impurity effects
The Micromechanisms of Tempered Martensite Embrittlement in 4340-Type Steels. 1313-1325A

Temper brittleness, Microstructural effects
Retained Austenite and Tempered Martensite Embrittlement in Medium-Carbon Steels. 1121-1133A

Temperature
See Boiling points
High temperature
Low temperature

Tempering
Restoration of Elevated Temperature Tensile Strength in 2.25Cr—1Mo Steel. 845-855A
Heat Effects of Precipitation Stages on Tempering of Carbon Martensites. 976-977A
Opening of the Peter G. Winchell Symposium on the Tempering of Steel. 991-993A
The Aging and Tempering of Iron—Nickel—Carbon Martensites. 995-1005A
Strength of Initially Virgin Martensites at —196°C After Aging and Tempering. 1007-1012A
Tempering Kinetics of Alloy Steels as a Function of Quench Rate and M_S Temperature. 1013-1019A
Crystallographic Study of the Tempering of Martensitic Carbon Steel by Electron Microscopy and Diffraction. 1025-1031A
Chi-Carbide in Tempered High-Carbon Martensite. 1033-1045A
Early Stages of Aging and Tempering of Ferrous Martensites. 1057-1065A
The Tensile Properties of an Fe—4%Mo—0.2%C Martensite Tempered Under Applied Stress. 1067-1077A
Tempering of Manganese and Mn—Si—V Dual-Phase Steels. 1079-1087A
Fatigue Crack Propagation in Intercritically Tempered Fe—9Ni—0.1C and Fe—4Mn—0.15C. 1089-1099A
Mössbauer Effect Studies of Tempered Martensite. 1135-1145A

Tenacity
See Tensile strength

Tensile modulus
See Modulus of elasticity

Tensile properties
See also Elongation
Tensile strength
Yield strength
The Tensile Properties of an Fe—4%Mo—0.2%C Martensite Tempered Under Applied Stress. 1067-1077A
Fracture Toughness of CF8 Castings at 4K. 1179-1188A
Microstructure and Mechanical Properties of Rapidly Quenched $L1_2$ Alloys in Ni—Al—X Systems. 1367-1377A
Deformation Processing of an Aluminum Alloy Containing Particles: Studies on Al—5% Si Alloy 4043. 1671-1679A

Tensile properties, Alloying effects
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A
Effects of Second-Phase Dispersoids on Deformation Behavior of Al—Li Alloys. 2174-2177A
Enhanced Superplasticity and Strength in Modified Ti—6Al—4V Alloys. 2535-2544A

Tensile properties, Anisotropy
On the R-Value Measurements. 1199-1205A
Influence of Nonsteady State Behavior on Superplastic Deformation of a 25.7Cr—6.6Ni Stainless Steel. 1875-1882A

Tensile properties, Composition effects
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A

Tensile properties, Cooling effects
Microstructure and Mechanical Properties of Zn—Al Alloys at Room Temperature. 1931-1934A

Tensile properties, Deformation effects
Effect of Processing Variables on Resultant Microstructure and Properties of C—Mn—Si Steel. 308-312A

Tensile properties, Heating effects
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A
Microstructures and Mechanical Properties of Hot Isostatically Pressed Powder Metallurgy Alloy APK-1. 733-742A
Tempering of Manganese and Mn—Si—V Dual-Phase Steels. 1079-1087A
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A
A TEM Study of Microstructural Changes During Retrogression and Reaging in 7075 Aluminum. 1843-1850A
Fracture Toughness and Fatigue Behavior of Matrix II and M-2 High Speed Steels. 1889-1898A

Heat Treatment for Improvement in Lower-Temperature Mechanical Properties of 0.40% C—Cr—Mo Ultrahigh-Strength Steel. 2387-2393A

Tensile properties, Impurity effects
Physical Metallurgy of Recycling Wrought Aluminum Alloys. 323-327A
Effect of Recycling on Residuals, Processing and Properties of Carbon and Low-Alloy Steels. 343-353A

Tensile properties, Microstructural effects
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A
Improvement in Lower Temperature Mechanical Properties of 0.40% C—Ni—Cr—Mo Ultrahigh Strength Steel With the Second-Phase Lower Bainite. 485-492A
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A
Effects of High-Temperature Fatigue on Microstructure and Mechanical Properties of a Nickel-Base Precipitation Hardened Alloy. 2021-2030A
Microstructure, Tensile Deformation and Fracture in Aged Ti—10V—2Fe—3Al. 2101-2115A

Tensile shear strength
See Shear strength

Tensile strength
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A

Tensile strength, Composition effects
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A

Tensile strength, Deformation effects
The Effect of Prior Heat Treatments on the Structure and Properties of Warm Rolled AISI 52100 Steel. 1427-1433A

Tensile strength, Heating effects
Restoration of Elevated Temperature Tensile Strength in 2.25Cr—1Mo Steel. 845-855A

Tensile strength, Microstructural effects
Thermomechanical Treatments of a 1050 Pearlite Steel. 365-378A

Tensile tests
See Tension tests

Tensile yield strength
See Yield strength

Tension impact tests
See Impact tests

Tension tests
Operant Strain-Rate Sensitivity During Tensile Necking. 2395-2406A

Ternary systems, Diffusion
Ternary Diffusion: the ($^2\tilde{D}$) Matrix of an Ideal Solid Solution. 45-51A
Evaluation of an Empirical Representation of Ternary Diffusion Paths in a System With Constant Diffusion Coefficients. 2479-2485A

Ternary systems, Phases (state of matter)
Predominance Area Diagrams of the System Co—S—O Between 583 and 1148K. 506-509B

Texture
See also Rolling texture

Texture, Deformation effects
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A

Thawing
See Melting

Thermal cycling
The Effect of Thermal Cycling on the Thermoelastic Martensitic Transformation in a Cu—Zn—Al Alloy. 1293-1297A

Thermal decomposition
See Pyrolysis

Thermal flux
See Heat transmission

Thermal measurements
See Heat measurement

Thermal properties
See Boiling points
Heat of formation
Vapor pressure

Thermal shock resistance
See Shock resistance

Thermochemistry
Oxide—Sulfate Equilibria in the Magnesium, Nickel and Manganese Systems Measured by a Solid K_2SO_4 Concentration Cell. 117-124B
Thermochemical Decomposition of Hydrogen Sulfide With Nickel Sulfide. 347-352B

Thermocycling
See Thermal cycling

Thermodynamics
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B
Thermodynamics of the System Iron—Aluminum—Oxygen Between 1073 and 1573K. 85-93B
On Binary P-T Phase Diagrams. 231-237B
Thermodynamics of Roasting Arsenopyrite. 239-251B
The Correlation of the Thermodynamic Properties of Wustite by a Gaussian-Based Formalism. 771-775A
A Correlation of the Thermodynamic Properties and Phase Diagram of the System Lead—Silver Using a Gaussian Plus Subregular Formalism. 1707-1712A
Thermodynamics of Nickel—Manganese Alloys Using Oxide and Fluoride Electrolytes. 2125-2130A

Thermoelastic properties
See Shape memory
Snoek effect

Thermomechanical treatment
See also Ausforming
Controlled rolling
Thermomechanical Treatments of a 1050 Pearlite Steel. 365-378A
The Effect of ITMT's and P/M Processing on the Microstructure and Mechanical Properties of the X7091 Alloy. 435-447A
Fatigue Crack Initiation and Microcrack Propagation in X7091 Type Aluminum P/M Alloys. 1189-1197A
The Effect of Prior Heat Treatments on the Structure and Properties of Warm Rolled AISI 52100 Steel. 1427-1433A
Processing—Microstructure Relationships for Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 2363-2374A

Thinners
See Solvents

Tig arc welding
See Gas tungsten arc welding

Tin, Alloying additive
Effect of Solutes on Lüders Strain in Low-Carbon Sheet Steels. 85-91A

Tin, Binary systems
Electron Charge Transfer in Liquid Copper—Tin Alloys. 1748-1750A

Tin, Impurities
Solute Segregation and Hydrogen-Induced Intergranular Fracture in an Alloy Steel. 903-911A
Caustic Stress Corrosion Cracking of NiCrMoV Rotor Steels—the Effects of Impurity Segregation and Variation in Alloy Composition. 2005-2019A

Tin, Mechanical properties
X-Ray Diffraction Study of Subgrain Misorientation During High-Temperature Creep of Tin Single Crystals. 117-126A

Tin base alloys, Mechanical properties
The Ductile to Brittle Transition in Tin—Lead Alloys Near Melting Temperatures. 939-946A
Observations of Grain Boundary Sliding During Superplastic Deformation. 1451-1458A

Tin compounds, Powder technology
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A
Laboratory Extrusion of Nb_3Sn. 2295-2299A

Titanium, Alloying additive
The Effect of Titanium on Creep Strength in 2.25Cr—1Mo Steels. 1443-1449A
High-Cycle Fatigue of (Fe, Ni, Co)$_3$V Type Alloys. 1997-2003A

Titanium, Alloying elements
Austenite Grain Coarsening in Microalloyed Steels. 1989-1995A

Titanium, Extraction
Prereduction and Melting of Domestic Titaniferous Materials. 55-62B

Titanium, Heat treatment
Titanium Alpha-Nitrogen Solid Solution Formed by High-Temperature Nitriding: Diffusion of Nitrogen, Hardness and Crystallographic Parameters. 1537-1543A

Titanium, Mechanical properties
Evaluating Hardening Laws at Large Tensile Strains in Sheet Specimens. 2269-2275A
The Effect of Hydrogen on the Multiaxial Stress—Strain Behavior of Titanium Tubing. 2527-2533A
Deformation Kinetics of Commercial Ti-50A (0.5 At.% Oeq) at Low Temperatures ($T < 0.3T_m$). 2545-2556A

Titanium, Melting
Consideration of Yttria for Vacuum Induction Melting of Titanium. 497-499B

Titanium, Reactions (chemical)
Reactions and Diffusion Between an Aluminum Film and a Titanium Substrate. 61-66A

Titanium base alloys, Forging
The Occurrence of Shear Bands in Nonisothermal, Hot Forging of Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 105-115A

Titanium base alloys, Mechanical properties
The Importance of Surface Layer on Fatigue Behavior of a Ti—6Al—4V Alloy. 127-132A
Effect of Fracture Surface Roughness on Growth of Short Fatigue Cracks. 153-155A
Fatigue and Microstructural Properties of Quenched Ti—6Al—4V. 233-240A
Microstructure and Tensile Ductility in a Beta Heat Treated Titanium Alloy. 413-420A
The Effect of Shear Bands on Service Properties of Ti—6Al—2Sn—4Zr—2Mo—0.1Si Forgings. 743-750A
Deformation and Fracture of Strongly Textured Titanium Alloy Sheets in Uniaxial Tension. 1333-1342A
Low-Cycle Fatigue of Ti—Mn Alloys: Microstructural Aspects of Fatigue Crack Growth. 1481-1486A
A Rationalization of Tensile Ductility and Fracture in Alpha-Beta Ti—Mn Alloys. 2043-2053A
Microstructure, Tensile Deformation and Fracture in Aged Ti—10V—2Fe—3Al. 2101-2115A
On Fatigue Crack Propagation of Titanium Alloys Under Dwell Time Conditions. 2178-2181A

Influence of Thermomechanical Processing on Low-Cycle Fatigue of Prealloyed Ti—6Al—4V Powder Compacts. 2497-2505A
Enhanced Superplasticity and Strength in Modified Ti—6Al—4V Alloys. 2535-2544A

Titanium base alloys, Metal working
Stretch Forming and Fracture of Strongly Textured Ti Alloy Sheets. 1343-1348A

Titanium base alloys, Microstructure
Alpha/Beta Interface Sliding in Ti—Mn Alloys. 500-503A
Processing—Microstructure Relationships for Ti—6Al—2Sn—4Zr—2Mo—0.1Si. 2363-2374A

Titanium base alloys, Powder technology
Deformation Behavior of Blended Elemental Ti—6Al—4V Compacts. 761-769A
Fatigue Crack Growth Rate of Ti—6Al—4V Prealloyed Powder Compacts. 1524-1528A

Titanium base alloys, Structural hardening
Strain Aging of Ti-6242 at Hot Working Temperatures. 1512-1516A
A Comparison of the Microstructures of As-Cast and Laser Surface Melted Ti—8Al—4Y. 1979-1988A

Titanium base alloys, Welding
Measurement of the Force Exerted by a Welding Arc. 1223-1224A

Titanium compounds
See also Titanium dioxide

Titanium compounds, Diffusion
Diffusivity of Hydrogen and Deuterium at Low Concentration in $Fe_{0.5}Ti_{0.5}$. 1573-1577A

Titanium compounds, Mechanical properties
Creep Deformation of TiAl and TiAl + W Alloys. 2170-2174A

Titanium dioxide, Impurities
The Effect of TiO_2 Additions and Oxygen Potential on Liquidus Temperatures of Some $CaO—Al_2O_3$ Melts. 685-692B

Titanium ores
See Ilmenite

Tool steels
See also High speed tool steels

Tool steels, Phase transformations
Quantitative Geometric Characterization of High-Carbon Martensite. 163-173A

Tool steels, Powder technology
Practical Applications of Hot Isostatic Pressing Diagrams: Four Case Studies. 211-221A

Tools
See High speed tool steels

Torsion tests
Failure Behavior of 304L Stainless Steel in Torsion. 2091-2099A

Torsional strength
See Shear strength

Toughness
See also Fracture toughness
Notch toughness

Toughness, Microstructural effects
Microstructural Sources of Toughness in QLT-Treated 5.5Ni Cryogenic Steel. 93-103A

Trace elements
Residual and Trace Element Effects on the High-Temperature Creep Strength of Austenitic Stainless Steels. 581-593A

Trace elements, Diffusion
High-Temperature Embrittlement of Nickel and Ni—Cr Alloys by Trace Elements. 595-610A

Transferring
See Heat transfer
Mass transfer

Transformations (materials)
See Allotropic transformation
Martensitic transformations
Phase transformations

Transition metal alloys
See Cobalt base alloys
Ferrous alloys
Manganese base alloys
Molybdenum base alloys
Nickel base alloys
Niobium base alloys
Palladium base alloys
Tantalum base alloys
Titanium base alloys
Tungsten base alloys
Vanadium base alloys
Zirconium base alloys

Transition metal compounds
See Iron compounds
Iron oxides
Manganese compounds
Molybdenum compounds
Nickel compounds
Niobium compounds
Palladium compounds
Titanium compounds
Titanium dioxide
Tungsten carbide
Vanadium compounds
Yttrium compounds
Zirconium compounds

Transition metals
See also Chromium
Cobalt
Hafnium
Iron
Manganese
Molybdenum
Nickel
Niobium
Palladium
Refractory metals
Tantalum
Titanium
Tungsten
Vanadium
Zirconium

Transition metals, Corrosion
Corrosion in Atmospheric Fluidized Bed Combustors—the Reactions of $CaSO_4$ With Chromium, Nickel, Cobalt, Iron and Several Alloys. 2423-2434A

Transmission
See Heat transmission

Transmission electron microscopy
The Substructure of (252)$_1$ Martensite Formed in an Fe—8Cr—1C Alloy. 2455-2468A

Traps
Discussion of "Permeation Measurements of Hydrogen Trapping in 1045 Steel" and Reply. 156-158A
Effect of Cold Working on the Hydrogen Trapping Phenomena in Pure Iron. 1299-1305A
Deuterium Transport and Trapping in Aluminum Alloys. 1307-1312A
Hydrogen Traps, Repellers and Obstacles in Steel. Consequences on Hydrogen Diffusion, Solubility and Embrittlement. 2189-2193A

Tritium, Diffusion
Tritium Permeability and Pressure Dependence of 304L Stainless Steel in the Temperature Range 723 to 1023K. 498-500A
Ion-Beam Profiling of ^3He in Tritium-Exposed Type 304L and Type 21-6-9 Stainless Steels. 2261-2267A

Tubing (metal), Mechanical properties
The Effect of Hydrogen on the Multiaxial Stress—Strain Behavior of Titanium Tubing. 2527-2533A

Tubular goods
See Pipe
Tubing (metal)

Tungsten, Alloying additive
Creep Deformation of TiAl and TiAl + W Alloys. 2170-2174A

Tungsten, Powder technology
The Properties of Tungsten Processed by Chemically Activated Sintering. 2031-2041A

Tungsten arc welding
See Gas tungsten arc welding

Tungsten base alloys, Irradiation
Irradiation Induced Precipitation in Tungsten-Based W—Re Alloys. 655-666A

Tungsten base alloys, Mechanical properties
A Re-Evaluation of the Mechanical Properties of Molybdenum- and Tungsten-Based Alloys Containing Hafnium and Carbon. 285-294A

Tungsten base alloys, Powder technology
Segregation to Interphase Boundaries in Liquid-Phase Sintered Tungsten Alloys. 667-677A

Tungsten carbide, Mechanical properties
High-Temperature Hardness of Tungsten Carbide. 1625-1629A

Tungsten carbide, Physical properties
High-Temperature Thermodynamic Properties of the Tungsten Carbide WC Determined Using a Galvanic Cell Technique. 1915-1919A

Tungsten compounds
See Tungsten carbide

Tungsten steels, Mechanical properties
Tempered Martensite Embrittlement in Fe—Mo—C and Fe—W—C Steel. 1389-1394A

Turbine blades, Microstructure
Microstructural Changes During Long-Time Service Exposure of Udimet 500 and Nimonic 115. 183-189A

Turbine disks
The Effect of Temperature, Specimen Size and Geometry on the Fracture Toughness of a 3% NiCrMoV Low-Pressure Turbine Disk Steel. 751-759A

Turbine disks, Materials selection
Microstructures and Mechanical Properties of Hot Isostatically Pressed Powder Metallurgy Alloy APK-1. 733-742A

Turbines
See Gas turbines
Steam turbines

Turbojet nozzles
See Jet nozzles

Turbulent flow
An Improved Mathematical Model for Melt Flow in Induction Furnaces and Comparison With Experimental Data. 306-308B

Hot Film Anemometry in Molten Woods Metal. 499-502B

Twinning
Chi-Carbide in Tempered High-Carbon Martensite. 1033-1045A

Ultimate shear strength
See Shear strength

Ultimate tensile strength
See Tensile strength

Undercooling
See Supercooling

Underground mining
A Mathematical Model for the Solution Mining of Primary Copper Ore. I.—Leaching by Oxygen-Saturated Solution Containing No Gas Bubbles. 541-551B
A Mathematical Model for the Solution Mining of Primary Copper Ore: II.—Leaching by Solution Containing Oxygen Bubbles. 553-558B

Upset forging
See Upsetting

Upsetting
Deformation Processing of an Aluminum Alloy Containing Particles: Studies on Al—5% Si Alloy 4043. 1671-1679A

Uranium, Extraction
A Kinetic Model of UO_2 Dissolution in Acid, H_2O_2 Solutions That Includes Uranium Peroxide Hydrate Precipitation. 325-334B

Uranium, Mechanical properties
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A

V notch Charpy impact tests
See Impact tests

V notch Charpy tests
See Impact tests

Vacancies (crystal defects)
See Lattice vacancies

Vacancies (lattice)
See Lattice vacancies

Vacuum, Environment
Surface Deformation and Crack Initiation During Fatigue of Vacuum Melted Iron: Environmental Effects. 1421-1425A

Vacuum induction melting
Consideration of Yttria for Vacuum Induction Melting of Titanium. 497-499B

Vacuum melting
See Vacuum induction melting

Valence
Electromigration of Hydrogen and Deuterium in Tantalum: Isotope Effect. 2255-2260A

Vanadium, Alloying additive
Effect of Molybdenum, Niobium and Vanadium on Static Recovery and Recrystallization and on Solute Strengthening in Microalloyed Steels. 1967-1977A

Vanadium, Alloying elements
Austenite Grain Coarsening in Microalloyed Steels. 1989-1995A

Vanadium, Extraction
On Binary P-T Phase Diagrams. 231-237B

Vanadium, Recovering
Ferrovanadium From a Secondary Source of Vanadium. 133-135B

Vanadium, Solubility
Partial Molar Volumes of Hydrogen and Deuterium in Niobium, Vanadium and Tantalum. 17-21A

Vanadium base alloys, Diffusion
Thermotransport of Hydrogen and Deuterium in Vanadium—Niobium, Vanadium—Titanium and Vanadium—Chromium Alloys. 871-874A

Vanadium chromium steels
See Chromium vanadium steels

Vanadium compounds, Crystal growth
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A

Vanadium steels
See also Chromium molybdenum vanadium steels
Chromium vanadium steels

Vanadium steels, Heat treatment
The Effect of the Nitrogen Potential on the Coarsening Kinetics of VN Precipitates. 379-384A

Vanadium steels, Solubility
Effect of Silicon on the Solubility Product of Vanadium Carbide in Austenite and on Other Phase Equilibria in Fe—V—Si—C Alloys at 993°C. 307-308A

Vapor phases
Composition of Liquid-Saturated Selenium Vapor. 308-311B

Vapor pressure
Vaporization Studies of Calcium Arsenate Under Neutral Conditions and in Contact With Copper Pyrometallurgical Slags. 171-174B
Composition of Liquid-Saturated Selenium Vapor. 308-311B

Vaporizing
See also Boiling
Coal gasification
Distillation
Volatization of Arsenic and Antimony in Copper Matte Converting. 303-306B
The Sulfidation/Oxidation of Armco Iron-Based Superalloys Between 1023 and 1373K. 657-665B

Vapors
See Water vapor

Vessels
See Pressure vessels

Vitrification
See Melting

Volatilizing
See Vaporizing

Warm working
The Effect of Prior Heat Treatments on the Structure and Properties of Warm Rolled AISI 52100 Steel. 1427-1433A
Cleavage Delamination in Impact Tested Warm Rolled Steel. 2487-2496A

Water
See also Sea water

Water, Reactions (chemical)
On the Relative Rates of CO_2—CO and H_2O—H_2 Reactions With Liquid Silver at 1283K and a Liquid Silicate at 1373K. 267-272B

Water vapor, Environment
Surface Deformation and Crack Initiation During Fatigue of Vacuum Melted Iron: Environmental Effects. 1421-1425A

Wear
See Hot gas corrosion

Wear particles
Wear Debris Due to Mode II Opening of Mode I Fatigue Cracks in an Aluminum Alloy. 1227-1230A

Weld defects
Precipitation in CF-8M Duplex Stainless Steel Welds. 37-44A

Weld metal, Crystal growth
Effect of Solidification Conditions on the Solidification Mode in Austenitic Stainless Steels. 191-197A

Weld metal, Reactions (chemical)
Comparison of Theoretically Predicted and Experimentally Determined Submerged Arc Weld Deposit Compositions. 510-513B

Welded joints, Diffusion
A Note on the Theoretical Treatment of Up-Hill Diffusion in Compound Welds. 2167-2170A

Welded joints, Mechanical properties
Effect of Weld Composition and Microstructure on Hydrogen-Assisted Fracture of Austenitic Stainless Steels. 75-84A

Welded joints, Microstructure
STEM Analysis of Primary Austenite Solidified Stainless Steel Welds. 23-31A
Precipitation in CF-8M Duplex Stainless Steel Welds. 37-44A
The Cooling Behavior of Deep Penetration Welds Undergoing Austenite—Ferrite Transformation. 483-486B
Weld Microstructure of (Ni, Fe)$_3$(V,Ti) Long-Range-Ordered Alloy. 1785-1791A

Welding
See Electron beam welding
Gas tungsten arc welding
Submerged arc welding

Welding current
Measurement of the Force Exerted by a Welding Arc. 1223-1224A

Weldments, Mechanical properties
Deformation Behavior of a 16-8-2 GTA Weld as Influenced by Its Solidification Substructure. 1357-1366A

Weldments, Microstructure
Microstructural Origin of the Skeletal Ferrite Morphology of Austenitic Stainless Steel Welds. 1271-1281A

Welds
See Welded joints

Wetting
Further Comments on Grain Boundary Wetting in Liquid Phase Sintered Fe—Cu Alloys. 977-978A

White iron, Directional solidification
Solidification and Solid State Transformations During Cooling of Chromium—Molybdenum White Cast Irons. 1793-1801A

Widmanstatten structure
Low-Cycle Fatigue of Ti—Mn Alloys: Microstructural Aspects of Fatigue Crack Growth. 1481-1486A

Wire, Mechanical properties
Degradation of Mechanical Properties After 100 to 250°C Storage of 25 Micrometer Al—1% Si Microelectronic Interconnect Wire. 921-924A
Microstructure and Mechanical Properties of Metastable F.C.C. Phase Wires in Mn—Al—C System Manufactured by In-Rotating-Water Spinning Method. 2319-2327A
Deformation Kinetics of Commercial Ti-50A (0.5 At.% Oeq) *at Low Temperatures ($T < 0.3T_m$).* 2545-2556A

Wire drawing
Microstructure and Mechanical Properties of Metastable *F.C.C. Phase Wires in Mn—Al—C System Manufactured* by In-Rotating-Water Spinning Method. 2319-2327A

Wolfram
See Tungsten

Work hardening
See Strain hardening

Work strengthening
See Strain hardening

Workability
See Formability
Hot workability

Wustite, Reduction (chemical)
A Study of the Mechanism of Reduction With Hydrogen of Pure Wüstite Single Crystals. 125-132B
The Decomposition of Wustite Under Mixed Chemical Reactions/Mass Transport Limitations. 753-759B

Wustite, Thermal properties
The Correlation of the Thermodynamic Properties of Wustite by a Gaussian-Based Formalism. 771-775A

X ray analysis
See X ray spectroscopy
X ray stress analysis

X ray diffraction
See X ray stress analysis

X ray spectra
See X ray spectroscopy

X ray spectrographic analysis
See X ray spectroscopy

X ray spectrometers
See X ray spectroscopy

X ray spectroscopy
STEM-EDS X-Ray Microanalysis of Small Precipitates in Iron-Base Thin Foils. 1943-1949A

X ray stress analysis
Effect of Gradients in Multiaxial Stress States on Residual Stress Measurements With X-Rays. 249-258A
Equilibrium Conditions for the Average Stresses Measured by X-Rays. 1907-1914A

Yield strength
Plastic Flow Phenomenology of 304L Stainless Steel. 1681-1695A
Investigation of the Early Stages of Deformation of Two-Phase Copper—Aluminum Alloys. 2407-2413A

Yield strength, Alloying effects
Effects of Second-Phase Dispersoids on Deformation Behavior of Al—Li Alloys. 2174-2177A
The High-Temperature Strength of Commercial-Purity Alpha Uranium. 2337-2346A

Yield strength, Composition effects
A Rationalization of Tensile Ductility and Fracture in Alpha-Beta Ti—Mn Alloys. 2043-2053A

Yield strength, Diffusion effects
The Effect of Hydrogen on the Multiaxial Stress—Strain Behavior of Titanium Tubing. 2527-2533A

Yield strength, Microstructural effects
Thermomechanical Treatments of a 1050 Pearlite Steel. 365-378A
The Effect of Grain Size on the High-Temperature Plastic Deformation of Nb_3Sn. 889-894A
Deformation Kinetics of Commercial Ti-50A (0.5 At.% Oeq) at Low Temperatures ($T < 0.3T_m$). 2545-2556A

Yield stress
See Yield strength

Youngs modulus
See Modulus of elasticity

Yttrium compounds, Thermal properties
Consideration of Yttria for Vacuum Induction Melting of Titanium. 497-499B

Zinc, Binary systems
Optimization of Binary Thermodynamic and Phase Diagram Data. 77-83B
The Thermodynamic Properties and Phase Diagram of the Zinc—Lead System. 2211-2218A

Zinc, Diffusion
Intergranular Zinc Embrittlement and Its Inhibition by Phosphorus in 55% Al—Zn Coated Sheet Steel. 401-411A
Size Effect, Internal Stress and Diffusion Driven Boundary Motion. 1579-1582A

Zinc, Extraction
Acid Diasolution of Willemite ($(Zn,Mn)_2SiO_4$) and Hemimorphite ($Zn_4Si_2O_7(OH)_2H_2O$). 335-346B
Screening Design Test for Cobalt Cementation From Zinc Electrolyte. 495-497B
The Effects of Certain Impurities and Their Interactions on *Zinc Electrowinning.* 645-655B

Zinc, Mechanical properties
Evaluating Hardening Laws at Large Tensile Strains in Sheet *Specimens.* 2269-2275A

Zinc, Ternary systems
Evaluation of an Empirical Representation of Ternary Diffu*sion Paths in a System With Constant Diffusion Coeffi*cients. 2479-2485A

Zinc base alloys, Mechanical properties
Microstructure and Mechanical Properties of Zn—Al Alloys at Room Temperature. 1931-1934A

Zinc compounds, Solubility
The Thermodynamic Activity of ZnO in Silicate Melts. 725-731B

Zinc plating
See Hot dip galvanizing

Zircon, Composite materials
Cast Aluminum Alloys Containing Dispersions of Zircon Particles. 273-283B

Zirconium, Alloying additive
The Effects of Heat Treatment and Composition on the Stress Corrosion Cracking Resistance of Inconel Alloy X-750. 133-139A
The Effects of Boron and Zirconium on the Creep and Fatigue Crack Growth Behavior of a Nickel-Base Superalloy. 895-901A
Structure and Properties of Rapidly Solidified 7075 P/M Aluminum Alloy Modified With Nickel and Zirconium. 1599-1606A

Zirconium, Machining
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A

Zirconium base alloys, Mechanical properties
Role of Grain Boundary Segregation in Diffusional Creep. 521-530A

Zirconium compounds, Crystal growth
Initiation of ZrC Dendritic Growth on the Surface of Spark Machined Zirconium. 5-10A